NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

NASA RELEASE NO. 59-125
EX 3-3260
Ext. 7827

FOR RELEASE:
Friday P.M.
May 1, 1959

NASA'S NEW SPACE PROJECTS FACILITY NAMED
GODDARD SPACE FLIGHT CENTER

T. Keith Glennan, NASA Administrator, announced today the Government's space projects center at Greenbelt, Maryland, will be named the Goddard Space Flight Center in commemoration of Robert H. Goddard, American pioneer in rocket research.

The Goddard Space Flight Center, under the overall guidance of the Director of Space Flight Development at NASA headquarters, will perform basic space research and will be responsible for the development of satellites, space probes and vehicles, tracking, communications, and data reduction systems. In addition, the facility will eventually be a command control center for NASA space flight operations.

The organization of NASA's new Space Center includes a director, not yet appointed; three major research and development groups, each headed by an assistant director; and business administration and technical services departments.

John W. Townsend, Jr., formerly Chief of NASA's Space Sciences Division, has been appointed Assistant Director for Space Science and Satellite Applications. Divisions reporting to him are: Space Sciences, Theoretical, Satellite Applications Systems, and Payload Systems. The Vanguard Operations Coordinating Group also reports to Townsend. Beginning today, the staff of the Vanguard Division will be integrated into other major NASA space flight projects.

John T. Mengel, former head of the Space Tracking Systems Branch in the Vanguard Division, has been named Assistant Director for Tracking and Data Systems. Reporting to him are the Tracking Systems, Data Systems, and Operational Support Divisions.

Robert R. Gilruth is the Center's Assistant Director for Manned Satellites. He currently heads the Mercury manned space flight project. Divisions under his direction are: Flight Systems, Engineering and Specifications, and Operations.

Michael J. Vaccaro, formerly assistant head of the Administrative Management Office and Personnel Director at the Lewis Research Center, Cleveland, Ohio, has been appointed Business Manager of the Space Center. The head of Technical Services has not been announced.

The Goddard Space Flight Center will be built on an approximately 550-acre tract acquired from the Government's Beltsville Agricultural Center, north of Washington, D. C. Located east of the Baltimore-Washington Parkway, the site is bounded on the south by Glendale Road.

The contract for the first two major buildings at the Center -- Space Projects Building and Research Projects Laboratory -- was let April 10, 1959, to Norair Engineering Corporation of Washington, D. C., at a total cost of $2,882,577. These two-story buildings, scheduled for completion in mid-1960, will total about 100,000 square feet of laboratory and office floor space. They will house a staff of about 450. The remainder of the staff of the Goddard Space Flight Center will be housed at the U. S. Naval Research Laboratory in Washington, and at the Langley Research Center, Langley Field, Virginia, until the completion of the facility.

- END -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

EX 3-3260
Ext. 7827
Release No. 59-128

For Release:
Monday A.M.'s
May 4, 1959

DAVID H. NEWBY NAMED NASA'S REPRESENTATIVE
AT ARMY ORDNANCE MISSILE COMMAND

David H. Newby, space and aeronautical scientist, has been appointed representative of the National Aeronautics and Space Administration at the Army Ordnance Missile Command, Huntsville, Alabama. He will assume his duties today.

Newby's responsibilities will include technical monitoring of NASA-funded projects at AOMC and maintaining liaison between NASA and the Army on programs of mutual interest. He will report to the Director of Space Flight Development at NASA headquarters, Washington D.C.

Born in Chickamauga, Georgia, in 1920, Newby received a Bachelor of Science degree in Electrical Engineering from Georgia Institute of Technology in 1942.

Following graduation, Newby joined the National Advisory Committee for Aeronautics, the predecessor of the NASA, at the Langley Research Center, Langley Field, Virginia. In the Instrument Research Division he developed instrumentation for aeronautical research in wind tunnels and in research aircraft. By 1951 he was Head of the General Electrical Instrumentation Section.

In 1951 Newby joined the staff of the U.S. Army Ordnance Corps at Redstone Arsenal in Huntsville, Alabama, as Deputy Chief of the Test and Evaluation Laboratory, engaged in rocket and missile testing. One year later he was named Chief of the Laboratory, a position he held until his appointment to the NASA staff.

Newby is a member of the American Rocket Society and the American Ordnance Association.

Mr. and Mrs. Newby (the former Marjorie Robinson) and their two children live at 2223 California Street, S.E., Huntsville, Alabama.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

EX. 3-3260
Ext. 6325

Release No. 59-129
Saturday, A. M.
May 2, 1959

Statement for the Press

Three space launchings planned by the National Aeronautics and Space Administration, which had been widely but unofficially reported as being scheduled for April and June, have been postponed because of technical difficulties.

The first of these was to be a satellite launched into an elongated orbit extending some 30,000 miles into space. In addition to other experiments, this project was designed to test the operations of equipment to be carried in the two remaining payloads, these latter designed to obtain cosmic radiation and other data on journeys millions of miles into space, in the general direction of Venus. The three launchings will be delayed until the technical difficulties are surmounted.

Dr. Abe Silverstein, NASA Director of Space Flight Development, made the following comment today:

"As is widely known, the astronomical tables tell us that the energy and guidance requirements for a shot toward Venus will be at an 18-month minimum during the early part of June. A firing toward Venus was challenging. For this reason, when these three space experiments were undertaken in November, 1958, we targeted the project toward an attempt to approach Venus in early June.

"Engineering difficulties developed in both the payload and the boost-vehicle system. Therefore the firings have been postponed until a later time.

"In this decision, my staff is in complete agreement with the recommendations of Brig. Gen. O. J. Ritland, Commander of the Air Force Ballistic Missile Division, and Dr. Louis G. Dunn, president of the Space Technology Laboratories, and their associates, who are performing this work for NASA under a contract with the AFBMD.

- END -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

NASA RELEASE NO. 59-131
EX 3-3260
Ext. 7807

FOR RELEASE:
Wednesday, PM's
May 6, 1959

CONVAIR NAMED VEGA PRIME CONTRACTOR

In a $33.5 million contract, NASA today named Convair (Astronautics) Division of General Dynamics Corp. prime contractor for Vega -- a launching vehicle capable of putting a 5,000-pound satellite in an earth orbit.

Vega, which may be used as a two-stage as well as a three-stage vehicle, will be ready for test flights by late 1960. A two-stage version should be capable of lofting a two-ton space laboratory carrying several men in a 300-mile orbit for several weeks.

A third stage would be added for moon and planetary probes. A three-stage Vega should be able to send a 1,000-pound payload to the vicinity of the moon and soft-land several hundred pounds of instruments on the moon. Also, a three-stager could power a 750-pound payload on a planetary mission.

"Vega represents the first of our more advanced boosters," said NASA Administrator T. Keith Glennan. "Its principal job will be lunar and planetary investigation."

The Convair contract calls for eight vehicles by the end of 1961.

Vega will consist of a modified Atlas as a first stage, a second stage by Convair using a Vanguard booster engine and a new third stage using storable fuel by NASA's Jet Propulsion Laboratory.

Fully loaded, Vega will weigh about 295,000 pounds and stand as high as a 10-story office building.

Under the contract, Convair has responsibility for design, construction, tests and launching of the vehicle. The contract does not include the cost of the 365,000-pound-thrust Atlas boosters.

Other contracts NASA has let for parts of Vega include:

General Electric Co. -- $4,120,000 -- For liquid-fueled second-stage 34,000-pound thrust engines.

JPL -- $6.4 million -- For 6,000-pound thrust third stage using a liquid fuel (nitrogen tetroxide and hydrazine) which can be stored on long missions without evaporating like other liquid fuels. Also JPL has technical Vega project supervision as well as responsibility for planning planetary payloads.

Vega guidance will be by autopilot in the second stage and inertial in the third stage with a system of jets to correct its flight path in space.

- END -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

FOR RELEASE
Thurs., May 7, 1959
12 noon

Address by T. Keith Glennan
Administrator
National Aeronautics and Space Administration
to the World Affairs Council of Philadelphia
May 7, 1959

The subject of international relations -- once the exclusive province of the Chief Executive and the members of the diplomatic service -- has become a principal topic of conversation and debate whenever thoughtful people come together. For this healthy situation, organizations such as yours, or the one with which I am more familiar, - The Cleveland Council on World Affairs - can take much of the credit. It has been said that the things we fear most are the things we do not understand. The educational activities of the World Affairs Councils all over this nation are tackling this problem effectively and with increasingly good results. Out of these efforts greater understanding of the complex problems of international relations and national commitments in the foreign field should result. And we should be better able to support those whose difficult job it is to handle these affairs.

Now normally, I obey the adage that the shoemaker should stick to his last. And today, I am not going to harangue you as an expert on the subject of foreign affairs -- a field in which I have a great interest but little professional competence. After all, I was trained as an engineer and have spent most of my life in the management of industrial, research and educational institutions. But my present assignment in Washington does include some responsibilities in the field of international cooperation which I think may be of interest to you. If I may, then, I want to tell you something about the National Aeronautics and Space Administration and describe to you the activities which bring us into contact with other nations.

Actually, the very nature of our business - the exploration of outer space involving the orbiting of unmanned and manned satellites around this and other planets is such as to assure that our activities will be of interest and concern to all the other nations on the earth. The real question is -- can we utilize this new opportunity for research in space as a means for honest cooperation between nations -- or must the suspicison and name calling and propaganda extend into this field, too?

As is the case in most other fields, our most powerful international competitor in space is the Soviet Union. The very existence of the National Aeronautics and Space Administration is, to an extent, a result of the success that Russia has achieved in the opening heat of this competition. You are all aware of the startling impact, on people in this country and abroad, of Sputnik I -- the first successful Soviet satellite -- in early October 1957. Until that striking demonstration of Russian competence in rocketry, few Americans had recognized the full extent of Soviet progress in the techniques required to place satellites in orbit. I think it is fair to say that most of us were torn between desire to applaud a great scientific and technological accomplishment and a troubled concern over having been bested, even temporarily, in a field where we had assumed, complacently, that we held at least a comfortable lead.

Our reaction -- as it has always been when we are unexpectedly confronted by a reverse of any kind -- was to mobilize our resources for a concerted effort to secure the position which we had thought we held. It is that mobilization of public opinion and individual enterprise that I have mentioned as one of the chief factors contributing to the creation of our national space administration. The Administration, the Congress, the press, and the scientific community agreed that our lag in rocket development had been largely due to the scattering of our effort among a variety of military, industrial, and professional agencies and laboratories, with diffuse leadership and no clear cut long range objectives. Out of their agreement on these fundamental facts, a unified civilian space authority -- NASA -- was born.

Perhaps this is the proper place for me to give you a thumb nail sketch of this new agency, its objectives and its relationships with the Department of Defense and other agencies of the Government. As a college president, I never lost an opportunity to talk about education -- one never knows what mind or what pocketbook may respond to the needs of a college such as the one I have had the honor to head -- Case Institute of Technology in Cleveland, Ohio. Now as a public servant, I find myself eager to have people understand the nature and work of the Space agency, for here too, the understanding and support of thoughtful people is of the utmost importance.

A so-called Independent Agency, the National Aeronautics and Space Administration reports to the President and is charged with responsibility for the conduct of the nation's research, development and exploration in aeronautics and space except for those activities having to do primarily with the development of weapons systems, military operations of the defense of the United States. These latter, of course, are the responsibility of the Department of Defense.

It hardly seems possible, but this new agency has been in operation for a period of seven months -- since October first last year. Having read a good bit in the newspapers and magazines about NASA and some of the nation's space projects, you probably wonder how we could be so active in such a short period of time. This nation's acknowledged leadership in the field of aircraft design and operation has resulted, in large part, from the activities of a little known but very important governmental agency -- The National Advisory Comittee for Aeronautics -- NACA. For 43 years NACA carried out its researches in comparative anonymity in three great laboratories and two field stations and provided the fundamental information on which most of our progress in the aircraft field has been based. NACA, with its 8000 employees -- more than a third of them professionally trained in technology and the sciences -- was absorbed by NASA on 1 October 1958 and thus became the base on which the new agency has been erecting its organization to cope with its vastly enlarged responsibilities.

On 3 December, the President transferred to NASA from Army jurisdiction, the Jet Propulsion Laboratory located in Pasadena, California. This laboratory employs a staff of some 2450 people and is operated by the California Institute of Technology under contract to NASA. Projects whose principal objectives were to develop knowledge about the environment of outer space were transferred from military organizations to NASA and with them a number of highly trained engineers and scientists joined our ranks. These projects included the deep space and moon probes, the Vanguard satellite program and several programs directed toward the provision of more adequate propulsion systems for satellite and deep space activities. Thus we found ourselves with manpower, laboratories and an operating program of no small dimensions even though it had been developed in an unbelievably short time.

As of the end of this fiscal year -- June 30th next -- NASA will employ about 9000 people and our plans for FY 1960 call for an additional staff of about 1000 persons, mostly in the technical areas. Total funding for the current fiscal year, made up of the appropriation by the Congress to our predecessor, NACA, of a similar but smaller appropriation to NASA itself, and of funds transferred to NASA by the military is in the neighborhood of 385 millions. Funds requested by the President and now under review by Congress will provide 485 millions for the 1960 fiscal year.

The relationship of our activities in NASA to those of the Department of Defense is one that some people find confusing. With a little explanation, I think the situation will become more understandable. Vehicles designed for peaceful exploration of space can also be used for military operations -- just as airplanes and automobiles can be used for military purposes. The Space Act separates these two kinds of activity, giving the bulk of the responsibility for the development of vehicles for peaceful exploration to NASA, and reserving the exploitation of their defense capabilities to the Armed Forces, as I have noted earlier in this discussion. At the same time, the Act creates channels to insure the co-ordination of research activities and developmental projects carried on by NASA or the Department of Defense.

Fundamentally, space is an extension of the atmosphere directly overhead. The rockets which we are using to roll back the frontiers of space are lineal descendants of the first Wright Brothers airplane, through the jet, which is an air-breathing rocket with wings. Until now, aircraft of the most advanced types have been developed normally by the military services, and only later converted to civilian use. This has been true of rocket development too, in the opening phases of space exploration.

With a single exception -- the small Vanguard satellite vehicle, which was designed soley for scientific research as a contribution to the program of the International Geophysical Year -- all the satellites and space probes which have provided data on conditions outside the atmosphere -- the Russian Sputniks and Mechta, as well as our own Explorers, Pioneers, Discoverers, and Project Score -- have been lofted into space by rockets which were conceived originally as military boosters.

NASA has made use of these military vehicles, suitably modified, ever since it went into active operation in October of last year, because they were the only rocket booster systems available with power enough to put even a modest payload into orbit or to send an electronic messenger beyond the Moon. For at least another year or so, we will be dependent on military boosters for our basic power plants.

But NASA and the Department of Defense have already begun several projects which will provide, in the years ahead, a variety of propulsion systems that will permit the full exploitation of our interests in the space environment, whether for civilian or military purposes. With these projects under way, we are turning our full energies to the basic tasks of planning for space exploration and the application of the new knowledge we are sure to acquire to projects beneficial to man the world over. And this brings me to a brief discussion of our activities in the international field.

I would like to quote briefly from the National Aeronautics and Space Act of 1958, establishing the agency. The Act opens with a declaration of the basic policy of the United States as it states -- "that activities in space should be devoted to peaceful purposes for the benefit of all mankind." It goes on to assert, as the first objective of our country in extra-terrestrial operations, that these activities are to be conducted in such a way as to "contribute materially to ... the expansion of human knowledge of phenomena in the atmosphere and space."

I ask you to consider those two statements -- that space activities "should be devoted to peaceful purposes for ... all mankind" and that they should "contribute ... to ... the expansion of human knowledge." That policy is in the enduring tradition of American political philosophy, from the Declaration of Independence to our own time. In matters of great consequence, we have usually attempted to look beyond the immediate prospect of gain or self-service -- to acknowledge the effect of our actions on humanity as a whole.

In accomplishing these objectives, we are directed by the Act to co-operate with other nations and groups of nations -- to promote, in every way possible, the peaceful applications of our work in space.

The specific language reads thusly -- "The Administration, under the foreign policy guidance of the President, may engage in a program of international cooperation in work done pursuant to the Act, in the peaceful application of the results thereof, pursuant to agreements made by the President with the advice and consent of the Senate."

A very substantial beginning has been made by this nation on a program of international co-operation in space research. In the diplomatic field, as long ago as January 1957 -- months before the Russians orbited their first satellite -- the United States proposed in the United Nations that a study be made for assuring peaceful use of outer space. We continue to be prepared to participate in such a study.

In furthering our broader objective of cooperating with other nations and groups of nations in promoting peaceful applications of space programs, we have made greater progress. In November, 1958, this country joined with nineteen other countries in sponsoring a resolution calling for creation of a special United Nations committee to study and report on the peaceful uses of outer space.

This resolution was adopted by the General Assembly of the U. N. on the 13th of last December and eighteen countries, including the United States and the Soviet Union, were named as members of this Ad Hoc Committee on the Peaceful Uses of Outer Space. I am sorry to say the Soviet Union was not present yesterday when the Ad Hoc Committee held its first meeting.

I regret their unwillingness to take part in these discussions. I am glad to say, incidentally, that NASA is participating in the meeting of the Ad Hoc Committee, through its Deputy Administrator, Dr. Hugh L. Dryden, who has been designated as an alternate representative of the United States.

Another avenue of peaceful co-operation in space has been opened up by the Committee on Space Research - better known as COSPAR - of the International Council of Scientific Unions. Through the American scientists on this Committee, we have offered to make available to this international body, a propulsion vehicle system to carry aloft a payload to be developed and supplied by one or more members of the group. Consultation is now going forward and we have hopes that such a project will become a reality within two years.

One of the vital elements in any space operation is the tracking of the space payload. Through stations located at strategic spots around the globe, we are able to keep in constant radio communication with the flight of a satellite or an interplanetary vehicle, regardless of its path or the diurnal rotation of the Earth. In this way, we receive the data which it transmits. We study the effect of space conditions on its orbit or trajectory; make corrections in its attitude or course; and activate instruments for special purposes - for instance, to survey the far side of the Moon. In the case of a manned space craft, we will maintain essentially constant communication with the pilot by this means, so that we may determine his condition, gain from him information which might not be available through instrumentation, and bring him back safely to a landing on the earth.

In this part of our program, we are fortunate in having close relations with many other countries, in all parts of the world. By contrast, the Soviet Union is largely confined to its own land area, and those areas immediately adjacent to it. A space vehicle passing out of direct contact with the Eurasian land mass is lost to the Russians, until the Earth's motion - or its own - brings it back into electronic view.

In addition to the Goldstone Tracking station that NASA operates in the Mojave Desert north of Barstow, California, and others at widely separated points on United States territory, we have for some time had the benefit of observations made by the 250-foot radio telescope at Jodrell Bank, in Manchester, England. We have similar arrangements with radio tracking facilities in half a dozen other nations.

Agreements were recently completed by NASA calling for the operation, by nationals of these countries, of tracking stations in Chile and Peru. Negotiations are now in progress with other nations covering the operation of similar stations, originally a part of the IGY program and several new stations. Together, these stations will give the United States - and the countries associated with us in space research - a worldwide tracking and data acquisition network, capable of keeping space vehicles under continual surveillance in any orbit or trajectory.

In this way, too, countries unable to devote great amounts of capital funds to the undertaking of space research can make a significant contribution to the total effort and can begin to develop their capabilities in this field.

Other nations have expressed varying degrees of interest in providing additional launching or tracking sites for use in joint operations with the United States, and in providing payload instrumentation to obtain specific data needed by their research institutions. For years, this nation has had cooperative programs in atmospheric research with Canada. In all of these projects, we are sincerely interested in teamwork with people in other countries. We will be delighted to discuss with any nation, including Soviet Russia, or any group of nations, the development of a truly cooperative program of scientific exploration in space.

I have a particular reason for my belief that a program of international cooperation in space is important. Science knows no national boundaries. As a matter of fact, science is truly an international language and provides a meeting ground for people where the solutions to problems are dependent on facts rather than on emotions. In the arena of international politics, men may connive and cajole, may practice deception and deceit and may fail to deal objectively with the problems that face them. In the scientific arena, there is an area of definite truth toward which men of all countries work.

Today's world is one which is increasingly dependent on technology and science for its welfare - even for its survival. Thus the technically trained man - the man who understands and accepts the basic scientific truths - is finding himself involved, to an ever increasing extent, in the debates on matters of international importance which rest, at least in part on an understanding of the meaning and application of his discoveries.

The facts of atomic fission, of the energy levels required for any of a variety of space missions, of the basic physical laws of nature - these are facts on which men of all nations can agree - and ultimately do. With technology so intimately inter-twined in our economic and material life, it seems clear to me that the ability to agree on the scientific facts of life provides the take-off point for ultimate agreement or compromise in the economic and political realms which are increasingly sensitive to technological developments.

It will take time - but if we refuse to be confused by the facts - if we are patient and learn how to use wisely the knowledge and advice of the scientist on matters where his expert knowledge is involved, real international progress will result, I am sure.

Now, before I close, - may I get something else off my chest? From time to time, I have been disturbed by the tendancy of many Americans to oscillate between forlorn discouragement and heady optimism, as they view the day-to-day situation in the contest for leadership in space. Each time the Soviet

Union attains a noteworthy success with a satellite or a space probe - and the four that they are known to have launched have been most impressive - I hear it said that we are hopelessly behind them. Every time we place an instrumented package in space - and there have been nine so far, achieving various degrees of success - I am asked whether we haven't finally caught up with - or passed - the Russians.

The truth is that our standing at this moment, in the competition for technical mastery of space, is somewhere between the two extremes. We are not hopelessly behind the Russians. On the other hand, we haven't yet caught up, and certainly haven't left them far behind. Any other estimate of the situation would be based on irrational fear or, worse, on heedless optimism.

The diversity of our space experiments, and the ingenuity demonstrated by the results of our efforts to date, have given us valuable experience and increasing confidence in this new activity. We are supported by the world's largest and most versatile industrial complex. Of increasing importance to this program will be the co-operation which we can expect from our allies scattered over the free world.

Our object is not merely to secure the widest possible dispersion of our own space activities, but to foster international programs to the fullest extent that we can -- always bearing in mind the broad outlook of the statesmen who gave us our charter -- that we think of the exploration of space as an undertaking for the energies of mankind as a whole -- not just another exercise to secure the political advantage of any one nation.

In this connection, I like to recall the words of my good friend, Dr. Lawrence M. Gould, President of Carleton College in Northfield, Minnesota. Dr. Gould said:

"I do not believe the greatest threat to our future is from bombs or guided missiles. I don't think our civilization will die that way. I think it will die when we no longer care - when the spiritual forces that make us wish to be right and noble die in the hearts of men... Notable civilizations have died from within, and not by conquest from without.... It happened slowly, in the quiet and the dark when no one was aware.

"If America is to grow great, we must ... rediscover and reassert our faith in the spiritual, non-utilitarian values on which American life has really rested from its beginning."

For many people of the generation now coming to maturity, those values will be found in space exploration, as we once found them in our migration to the West. They will be realized in the concerted effort by mankind to extend our province toward the stars.

- END -

NASA Release No. 59-130

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

EX 3-3260
Ext. 6325

Date: May 8, 1959
Release No. 59-133

Memo for Editors:

Attached is a release explaining the procedures for handling information on satellite and space vehicle launchings from East Coast sites. NASA and the Department of Defense have reached agreement on the procedures which are based on the premise of getting factual information into the hands of the news media as quickly as possible. Please note that these procedures apply only to East Coast satellite and space vehicle launchings; the agreements and procedures governing DOD military missile launchings remain in force.

Walter T. Bonney
Director
Office of Public Information

May 8, 1959

Information-Handling Procedures

for

East Coast Satellite and Space Vehicle Launchings

U. S. satellite and space vehicle launchings are part of a national program designed to advance this nation in space activities and are performed, principally, under the direction of the National Aeronautics and Space Administration or by the Department of Defense. Each launching is one experiment in a long-range program.

East coast launchings will originate at either the U. S. Atlantic Missile Range (AMR), Florida, or the NASA Wallops Field Station, Virginia. The procedure outlined below applies equally to both launching sites.

Authority and responsibility for the dissemination of information rest with the Assistant Secretary of Defense, Public Affairs, ASD(PA), and the Director of the NASA Office of Public Information (OPI). Firings that are part of the civilian space program normally will be administered by NASA. Firings that are part of the military space program will be administered by the Department of Defense. In accordance with existing procedures, certain launchings will not be open to coverage as outlined herein for national security reasons.

IMPLEMENTATION

This information-handling procedure is divided into three phases: Pre-launch, launch, and post-launch. Implementation involves the use of press releases, background documents, press conferences, still pictures, motion pictures, television, and personality interviews.

A. <u>PRE-LAUNCH PHASE:</u> The NASA Director, OPI, if the launch is part of the civilian program, or the ASD(PA), if it is part of the military program, will hold a press briefing for planning purposes only several days in advance of the scheduled launch. The briefing will be held in Washington and will be used only to explain information-handling arrangements (logistics) for the programmed launch.

Simultaneously, the AMR Commander will hold a similar logistics briefing for planning purposes only at his headquarters.

If the Wallops Station is the launch site, the Director, OPI, will hold a briefing for planning purposes only at NASA Headquarters, Washington, to explain the information-handling arrangements.

Twenty-four hours before the scheduled launch, the NASA Director, (OPI), (for civilian launches), or the ASD(PA), (for military launches) and the AMR Commander will simultaneously distribute pre-launch press kits.

All press-kit material will be marked, "HOLD FOR RELEASE UNTIL LAUNCHED."

For the purposes of this procedure, the following definitions and interpretations will apply:

1. LAUNCH: Ignition of the main stage. (On announcement or witnessing of the main stage ignition, the press kit will be released.)

2. HOLD: A temporary delay in the launching countdown which may extend for several hours. (No information is authorized for release during HOLD.)

3. POSTPONEMENT: A delay in the launch attempt requiring rescheduling of the firing to a later date. (On the declaration of the postponement, the press will be given a statement briefly outlining the nature of the intended experiment.)

(In the event of an explosion or inflight abort within the area controlled by the Range Safety Officer, the Range Commander will issue a statement containing necessary detail to assure safety of the inhabitants of the area.)

B. LAUNCH PHASE: Provisions will be made for news media representatives to witness launchings from safe positions and to file their stories over appropriate communications facilities.

Announcement of the stage firings shall be made by the AMR Commander or the Wallops Station Engineer-In-Charge. They shall be made simultaneously to the press assembled at the launch site and in Washington news center.

In case of booster failure after ignition, a press briefing will be called at the launch site as soon as possible to describe the nature of the failure. The Test Director and the AMR Commander (or Wallops Station Engineer-in-Charge, if launched from Wallops) will conduct this briefing. The same information will be distributed simultaneously at the Washington news center.

C. POST-LAUNCH PHASE: The center of news dissemination concerning post-launch data will shift to Washington immediately after the firing of all stages.

Approximately two or three hours after launch, a press conference may be held in the appropriate Washington news center where technical principals will present tracking information and scientific findings available at that time. The Washington press conference will be "piped" to a suitable point near the missile range for media representatives there.

If requested by the press, a short meeting may be held at the launch site as soon as is practicable after the launch, but before the Washington press conference, to provide details and "color" of the launching phase.

When appropriate, a second press conference shall be held in the Washington news center about six to ten hours after launch to describe progress of the experiment and to confirm or amplify earlier reports released on "first-cut" analysis of received data.

For extended experiments that run days, weeks, or months, periodic press releases shall be made as significant data become available. Press conferences shall also be called if the significance of the results warrants this kind of presentation.

-END-

13-1-L

NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
1520 H STREET, NORTHWEST · WASHINGTON 25, D. C.
TELEPHONES: DUDLEY 2-6325 · EXECUTIVE 3-3260

FOR RELEASE: May 11, 1959

NASA POLICY CONCERNING MERCURY ASTRONAUTS

The Mercury Astronauts have been detailed to NASA by their respective military departments pursuant to an agreement approved by the President which makes them subject to the regulations and directives of NASA in the performance of their duties.

It is recognized that the experiences of the Mercury Astronauts through all phases of Project Mercury, from the commencement of training to accomplishment of orbital flight, will be of great interest to the public. NASA has therefore adopted the following policy on disclosure of information concerning the experiences of the Mercury Astronauts:

1. All information reported by the Mercury Astronauts in the course of their official duties which is not classified to protect the national security will be promptly made available to the public by NASA.

2. Public information media will be granted frequent accessibility to the Mercury Astronauts for the purpose of obtaining information from them concerning their activities in

Project Mercury. The timing and conditions of interviews with the Mercury Astronauts for this purpose will be controlled by the NASA Director of Public Information so as not to interfere with their performance of official duties. During such interviews, the Mercury Astronauts will be directed to disclose all information acquired in the course of their activities in Project Mercury, except information classified to protect the national security.

3. While detailed to NASA for duties in connection with Project Mercury, the Mercury Astronauts

(a) may not, without the prior approval of the NASA Director of Public Information, appear on television or radio programs or in motion pictures;

(b) may not, without the prior approval of the NASA Director of Public Information, publish, or collaborate in the publication of, writings of any kind;

(c) may not receive compensation in any form for radio, television, or motion picture appearances, or for the publication of writings of any kind, which involve reporting to the public their performance of official duties in any phase of Project Mercury; and

(d) may not endorse commercial products.

4. The Mercury Astronauts are free, singly and collectively, to make any agreement they see fit for the sale of their personal stories, including rights in literary work, motion pictures, radio and television productions, provided such agreements do not violate the foregoing restrictions.

END.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

MERCURY

PRESS CONFERENCE

ASTRONAUT PROGRAM OUTLINED

Tuesday, 12 May 1959
2:30 p.m., EDT.

The press conference was called to order at 2:30 p.m., Mr. Ed. Pipp, presiding.

PRESENT:

ED PIPP, President, Aviation Writers Association, presiding.

WALTER T. BONNEY, National Aeronautics and Space Administration.

GEORGE M LOW, Chief, Manned Space Flight Program, Office of the Assistant Director for Advanced Technology, National Aeronautics and Space Administration.

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MR. PIPP: There is no great immediate need for me to introduce the first speaker here today. We all know Walter Bonney well. He will lay out the ground rules on this. This should last about an hour. We hope you learn all about what the program is.

MR. BONNEY: Thank you, Ed.

This afternoon we have a gentleman from the National Aeronautics and Space Administration here to answer questions in the area of how do you educate and train a Mercury Astronaut.

There have been distributed some fact sheets which, if you skim through them, may pose some questions that you would like to ask.

We are having a transcript made of the questions and answers,and copies of the transcript will be available about nine o'clock tomorrow morning. They will be here and also at our office.

By way of giving you just a little background, the genesis of Project Mercury occurred at least a year ago when research scientists of the then National Advisory Committee for Aeronautics began studying the practibility of attempting a simple device which could be propelled into orbit by a ballistic missile booster and then brought by retrorockets safely back to earth.

When the Space Act was signed by the President at the end of July of last year and NACA became a part of the National Aeronautics and Space Administration , this Project was brought along, of course, and was continued.

By last December the Administrator of NASA, Dr. Keith Glennan, was able to say that the Project was going ahead with considerable vigor. Early in January McDonnell was given a contract to build the capsules that the Astronauts will be riding in as they go out into space. On January 27th we announced the selection processes being used in picking the Astronauts.

On April 6th the astronauts, six of them, had been chosen and had reported into the Langley Research Center at Hampton, Virginia.

I was asked to remind you that Langley is the location from which nearly forty years ago General Billy Mitchell and his intrepid aviators went out over the Atlantic to sink a battleship.

Today the astronauts are at McDonnell, in St. Louis. They are getting acquainted with the capsule, and for a couple of days they will be receiving technical briefings from the engineers there at McDonnell.

Now to answer your questions we have the Chief of the Manned Space Flight Program in the office of the Assistant director for advanced technology of NASA. He is a Viennese. He came to the United States nineteen years ago and in 1945 became a U.S. citizen.

He took his Bachelor of Science degree in aeronautical engineering from Rensselaer Polytechnic Institute in 1948, and the following year, ten years ago, he joined NACA as an aeronautical space scientist at the Lewis Flight Propulsion Laboratory in Cleveland, Ohio.

During his years at the Lewis Facility, he was Head of the Fluid Mechanics Section and later Chief of the Special Projects Branch. He specialized in research in the fields of aerodynamic heating; boundary layer theory and transition; and internal air flow in super and hypersonic aircraft.

He is the author of numerous technical papers and articles, and is an Associate Fellow of the Institute of the Aeronautical Sciences, and a member of the American Rocket Society.

It is a very real pleasure to introduce to you a young man who knows very much about this total program, and will try to answer your questions, George Michael Low.

MR. LOW: Thank you, Walter.

Gentlemen, I don't have a formal statement, since we released a story on the entire testing program for the Project Mercury Astronauts. I would like perhaps to fill in the two-week period that Walter left out in his discussion.

On April 9th, as you recall, the seven astronauts were in Washington at the time that we released their names, and they met most of you ladies and gentlemen at that time.

Immediately after April 9th they went back to their home stations and took care of their affairs, and then reported to Langley Field, Virginia, on April 27th. They immediately started the training program.

They have been there about two weeks now. Again, as most of you know, they are spending a good part of this week in St. Louis at the McDonnell Aircraft Corporation.

Are there any questions on this training program? I will be happy to answer them.

QUESTION: How important are the emotional requirements in comparison with the professional requirements in the selection of the astronauts?

MR. LOW: The question is: How important are the emotional requirements as opposed to the professional requirements.

QUESTION: Yes.

MR. LOW: As you know, all seven of these men are experienced test pilots. They have under gone stressful conditions throughout most of their life, certainly throughout their test-flying life. So I think that all the men who underwent the selection program probably met more than the emotional criteria they would need for this job.

QUESTION: Are these six phases going to go on consecutively or concurrently? In other words, are you going to get all through with number one before you go to number 2?

MR. LOW: They are going on concurrently.

MR. PIPP: Is there any program where these men will fly in a ballistic missile of any sort, other than as it says in the program, high-performance aircraft?

MR. LOW: Yes, there is. In the build-up program for the Project Mercury flight vehicle, for the audible flight on the Atlas Booster, we have a large number of other booster vehicles. One of these is the Redstone booster. After a number of instrumented Redstone flights and after we are certain that the system will be completely reliable, man will also have training flights in the Redstone vehicle.

QUESTION: Do you have any idea how soon that will be?

MR. LOW: No, I don't, because the Project is very much of a research and development program. There are many new developments that have to be completed and there are many places in the program where the progress can be delayed by a week or perhaps a month or several months. Our first consideration is the safety of the man in the capsule. For this reason we can not at this time predict dates as to when the first flight will be.

QUESTION: What will the longest flight be in the Redstone vehicle that you contemplate?

MR. LOW: About 130 miles in range; a little over 100 miles in altitude. This will give about five minutes of weightlessness.

QUESTION: You stated that there would be no preliminary flights of these people in an Atlas before they went into orbit. This was before the House Space Committee a couple of years ago. You didn't make clear, at least to me, why you would go for broke in the Atlas without doing something a little less strenuous. You give them a short flight in the Atlas? No. You are going to put them into orbit. Why is that?

MR. LOW: We believe that with the build-up of first of all a few seconds of weightlessness, perhaps 45 seconds of weightlessness in airplane flights, then 5 minutes of weightlessness in the Redstone flights, we will know enough about man's reactions to weightlessness to allow him to complete the mission, the orbital mission. Of course, we will fly animals in the orbital mission before we fly man in the orbital mission.

QUESTION: This has nothing to do with the fact that you may be a little scared of the Atlas as to its reliability?

MR. LOW: No; I think that we must recognize that the Atlas vehicle itself will not be a completely reliable vehicle in the time period that we will be launching it. But we have incorporated in the Mercury system a safety escape system, and this must be as nearly completely reliable as any system has ever been.

Let me repeat again that we will not send a man on the Mercury mission until we are convinced that the mission will be no more dangerous than certainly a normal test flying type operation.

QUESTION: What kind of animals do you anticipate sending out there first?

MR. LOW: The animal program is still being formulated and we don't know as yet specifically what animals we will be using.

QUESTION: Are you going to fire some off from Wallops?

MR. LOW: That we don't know yet.

QUESTION: Will there be some fired from Vandenberg Air Force Base on the West Coast?

MR. LOW: No. All of the Mercury launchings will be either from Wallops Island or Cape Canaveral Atlantic Missile Range.

QUESTION: Does the X-15 program tie in with Mercury?

MR. LOW: There is no direct tie-in to the X-15 program with Mercury. On the other hand, all the information that is obtained in the X-15 program, and several other programs, is of course used in the Mercury Project.

QUESTION: Going back to your conference on the Atlas, do you mean that we will have a man in orbit before we have a reliable intercontinental missile?

MR. LOW I didn't hear the question.

QUESTION: Going back to your comment on the Atlas, does that mean that we will have a man in orbit before we have a reliable intercontinental missile?

MR. LOW: No, I don't think it does. Reliability is a relative thing.

For an unmanned mission, nine out of ten shots, or 95 out of a hundred shots, may be safe. But as far as a man mission is concerned we need a much higher reliability.

QUESTION: Will you dispense with the Redstone flights for the later Mercury Astronauts or will you require all of them to go through the preliminary flights?

MR. LOW: The question was, will we dispense with the Redstone flights for the later astronauts, or will we require all of them to go through the preliminary flights.

This again is a difficult question to answer, because we are embarking in a new area here that we know very little about. After we have progressed further in the training program we will see whether there is indeed a need for the Redstone flights or not.

MR. BONNEY: May I, after John gets his question in -- because I don't want to stop anybody here -- may I ask after you finish the question if we could get back to the subject which Mr. Low is most prepared to discuss, namely, the education and training of the astronauts, rather than other facets of the program.

QUESTION: This training program you outlined here, what span of time does it cover? Is this the complete program, or is this the preliminary phase?

MR. LOW: The training program will continue until the men have made flights and will continue beyond the first flight of the first man, since there will be more than one flight.

The general outline here covers all the phases.

QUESTION: Up to the flight?

MR. LOW: That is correct.

QUESTION: I don't know whether this question is out of order in the context of this meeting.

What lies beyond, for these astronauts, after they have all taken their first flight around the earth and so forth?

MR. BONNEY: I think that the answer is that inevitably there will be follow-on programs; precisely what those programs are not only am I not prepared to say, but very frankly I don't know.

Certainly we are not going to stop with what is just proving that man can be put into orbit. We then are going to try to develop useful vehicles perhaps with more than one man in them that will help us in our future steps in the exploration of space.

QUESTION: On the third phase of the training program, what will be required to do in the training for the operation of the vehicle? What will he have to do?

MR. LOW: The question is, in the third phase of the training program, the training in the operation of the Mercury vehicle, what will the pilot be required to do.

As a part of this training program we have a number of flight simulators, different types of simulators. For example, you are familiar with the X-15 type pilot control device.

Let me go back one step. The Mercury capsule will be controlled in orbit, stabilized in orbit with some small jets. These jets can be controlled by the pilot with a small control stick similar to the stick in a regular aircraft.

We are setting up at Langley Field a simulator to duplicate these jets at the arms of an iron cross, and the pilot will actually fly on the ground a simulator to check out the reaction control systems and his ability to control them.

There will be other simulators, complete capsule mock-ups with all the various switches and gauges in them, and the ability by a technician outside of the capsule to feed into the pilot's display certain emergency features.

It will then be up to the pilot in his training to correct for these procedures by taking the correct action.

QUESTION: Will each of the astronauts be given an opportunity to fire this emergency launch procedure?

MR. LOW: No, I don't believe they will.

QUESTION: Then the first man to go up won't necessarily know that this thing really works?

MR. LOW: Oh, he will have observed.

QUESTION: But he will not have ridden through such a procedure?

MR. LOW: He will not have been through such a procedure?

I think there are a lot of precedents for not doing this. For example, in ejection seats in modern aircraft. These seats are tested with dummies, with animals, perhaps, but because they are used only in emergency procedures they are not tested with a man.

Again, because the man may never have to use his escape system, we may not test them in it.

QUESTION: Will you test that particular thing with animals? The ejection? The emergency ejection? Will you test it with animals?

MR. LOW: Is the question, will we test the escape system with animals?

QUESTION: Yes.

MR. LOW: Yes, we will.

QUESTION: Under what phase does your ballistic load lob program fall? I don't see it listed in the Redstone flight.

MR. LOW: It is not specifically listed. It would fall under several of the phases. Item 5, aviation flight training. Certainly it will fall under item 3, training in the operation of the Mercury space vehicle, because the Redstone might be considered as one of our most important simulators in the final mission.

And certainly also under item 2, familiarization with the conditions of space flight.

QUESTION: I wonder if you would discuss, Mr. Low, the training in human disorientation devices.

MR. LOW: A human disorientation device, one particular type of human disorientation device, is a device that looks very much like a cement mixer, located at the Navy School of Aviation Medicine in Pensacola.

The man is placed within this device without any visual reference to the outside. The device has the possibility of tumbling about two of the axes. He can therefore be spun in about at least two of his axes at any given time. He will become presumably quite disoriented.

The effects of this may be seasickness or it may also be a complete loss of visual attitude reference. We hope to use a device such as this first of all to determine the man's threshold tolerance to disorientation. Also to find out whether there are any methods by which he can delay the effects of disorientation, such as tensing or others.

MR. BONNEY: Personally I have to beg your pardon. I got scheduled on an appointment for 3:15, so I have to go back to the shop. This was before the program was shifted around.

Ed Pipp has graciously consented to continue to preside.

QUESTION: Mr. Low, what training, if any, is it contemplated or in progress for the wives of the astronauts?

MR. LOW: What training will there be for the wifes of the astronauts?

This is an area that we haven't discussed too widely yet. I do believe, though, that the wives should be fully briefed on all the technical aspects of the program so that they will know exactly what Project Mercury means.

QUESTION: To your knowledge have any of these astronauts applied for civilian insurance since they were appointed to this job? And have they succeeded in getting it?

MR. LOW: The question is, have any of the astronauts applied for civilian insurance since they have been selected, and have they succeeded in getting it.

I do not know the answer to that.

QUESTION: How closely can you simulate the "G" forces they will go through in these centrifuges?

MR. LOW: You can simulate the reentry decelerations, which are the worst conditions of the flight, exactly in the centrifuges.

This we have already done in the Johnsville Naval centrifuge. In fact we have gone to much higher peaks than the man will undergo in a manned centrifuge without any ill effects.

QUESTION: Will you use the 7-mile track at Holloman at all in this thing?

MR. LOW: The question is, will we use the 7-mile track at Holloman.

It is not in the picture at this time.

QUESTION: Can you give us any idea of the kind of heat, pressure and "G" forces that these men will be subjected to in the training program?

MR. LOW: The question is, what kind of heat, pressure and "G" forces that the men will be subjected to in the training program. And I presume also in flight; because in the training program they will undergo essentially the same conditions as in flight.

The "G" forces portion of the question first.

During takeoff they will take a maximum of 8.6 "G's". During a normal reentry, a little less than 9 "G's". And during the worst possible abort or escape conditions, 18 to 20 "G's".

QUESTION: For what periods on these?

MR. LOW: During the launch trajectory it builds up to a peak of 8.6 "G's". The time at 8.6 "G's" is nil. He may be above 5 "G's" for perhaps half a minute.

During the reentry again the time at peak-G's negligible. Above 5 "G's" he would again be for the order of half a minute to a minute.

Again I think I would like to point out that we have had men in the identical couch that we plan to use in the Mercury undergoing these same G-histories, that is, "G's" for the same period of time, in the Johnsville centrifuge. In fact we have had a man up to, I believe, 25.6 "G's" without ill effect.

The other part of John Finney's question was the pressures and temperatures, I believe, in the capsule.

The pressure in the capsule, I believe, will be of the order of one-third of sea level atmospheric pressure. However, because of the very much higher concentration of oxygen than we have here at sea level, the oxygen partial pressure will be as much or greater than what we are accustomed to.

The temperature during the normal operation in orbit will be a comfortable room temperature. During reentry, it may for a short period of time go up to 100, perhaps 150 degrees. But the man will not feel this since he will be in a ventilated pressure suit.

QUESTION: That extreme figure again?

MR. LOW: 130 to 150.

MR. PIPP: Will these heats and forces be simulator-experienced in the Redstone flights?

MR. LOW: The question I believe you heard.

The forces will be completely simulated in the Redstone flights. The temperature will not be simulated in the Redstone flights but it will be simulated in ground simulators.

QUESTION: What is the other component besides oxygen of the atmosphere that will be in this thing? Nitrogen or helium?

MR. LOW: It may be pure oxygen.

QUESTION: Will the man wear an oxygen mask throughout?

MR. LOW: No, he will not. He will wear his pressure suit throughout the trip. But in the normal operation the face plate will be open.

QUESTION: He can close it in the event of emergency?

MR. LOW: I didn't get the question.

QUESTION: How would the man be notified in the event of a leak? Do you have an automatic sensing system with pressure inside the capsule?

MR. LOW: The question is, how would the man be notified in case of a leak.

I think he, if his face plate were open, might sense it quicker than any instrument. The cabin will also be instrumented with sensing elements. And in that event he would immediately close the face plate on the pressure suit.

QUESTION: What are you doing to develop suitable articles of diet for the period that the man will be up if he is up for, say 18 or 20 hours?

MR. LOW: The question is, what are we doing to develop suitable diet for the man for the period that he will be up.

The maximum period he will be up is of the order of one day. I don't think that diet is a problem in this area. The nutritional diet problems become important when we are talking of space missions of days, weeks, or perhaps even years. In this case I don't know whether we are going to take any -- whether we will have to take any special trips in this direction.

QUESTION: He will certainly take some liquids, water?

MR. LOW: Yes.

QUESTION: In a squeeze bottle? How will it be packaged?

MR. LOW: It will have to be in a squeeze bottle because of weightlessness.

QUESTION: What will the pressurization level be inside the capsule? 15,000, 18,000, 10,000, or what?

MR. LOW: The question is, what will the pressurization level be inside the capsule. It is one-third of an atmosphere which I believe corresponds to about 18 or 20,000 feet altitude.

QUESTION: You mentioned a ground simulator iron cross that you will use to test out the jets, the jet control system. Was there any thought to installing a mock-up of this capsule inside of, say, a Convair, like the experiments now underway at Wright Field, to see whether a man could orient in space under zero "G" conditions?

MR. LOW: The question is, are we going to install a mock-up of the capsule in a Convair or some other airplane that gives zero "G" for a short period of time to let the man control the capsule under weightless conditions.

In a C-131 or Convair, one can only obtain 15-seconds of weightlessness. This is not enough time to study the reactions of the pilot to the attitude control system.

The pilots will take flights in high-performance airplanes, F-9F's, the F-102, the T-33, which will give him about 45-seconds of weightlessness. They may also fly in the C-131 at Dayton, where they will only get 15-seconds of weightlessness. But they will, in those aircraft, have the possibility to perform control functions on simulator push boards.

QUESTION: Why is it necessary to give them such an intensive basic education in such things as aviation medicine and whatnot, if their flight is going to be limited -- and I assume is going to be thoroughly automated?

MR. LOW: The question is, why is it necessary to give them such an intensive training program if the flight is going to be limited and thoroughly automated.

Let me take this one piece at a time.

First of all, even though the flight is completely automated, we feel that the Mercury capsule is still essentially a flying machine; that the man will perform very important back-up functions.

If any one of the systems, and perhaps the back-up system, should fail, then the best capability we have of fixing would be through the man. The man would have the possibility of navigating, of controlling the attitude, of taking all the emergency procedures by himself.

We, therefore, feel that the man himself is one of the most critical components of the space capsule.

We also feel that he will be able to perform his tasks very much better if he is thoroughly educated in all the principles of space flight, as to why an orbit remains a certain orbit, what is done to change an orbit, the aerodynamics of reentry, the necessity for certain angle of counter reentry. If he knows all these facts and knows the reasons for the various principles behind Mercury, we feel that he is going to do a much better job flying.

QUESTION: If everything works perfectly in the automated system, will the man be just going along for the ride, or will he have something to do?

MR. LOW: The question is, if everything works perfectly in the automated system will the man be going along just for the ride.

He will not go just along for the ride. In the first place, he will be making scientific observations in an area where no man has been able to make observations. He will see the sky differently than it has ever been seen before. He will of course be able to observe cloud cover and things like that.

In addition to that, he will, even if everything works perfectly, be asked to perform certain control and navigation tasks so that we can assess man's capabilities in the space environment in order to get data for future space missions.

QUESTION: Will these navigation and control tasks be hitched up to anything significant? Isn't it true that the data links permit you to operate this vehicle completely from the ground? The operation of the escape rocket system?

MR. LOW: The question is, will the operation of control that the man will do be linked to anything significant, because it is understood that all the operations will also be linked to the ground.

I mentioned before that in the normal mission he will be asked to perform these control tasks. At that time he will switch off the automatic control system, go on manual control, and work with the orientation of the capsule, for example.

I think the navigation by the pilot, in the sense that he will determine at each moment where he is, is a very important function, because if the automatic system should go out, then he will know exactly where he has been, where he is going, and what action to take. It is a similar thing to always keeping sight of an emergency landing field when you are flying a Piper Cub.

QUESTION: Is there any provision made to override the pilot's control of his vehicle? The thing I have in mind is this: You have carefully selected these guys, but they are going up into a completely unfamiliar environment. Suppose the man should push the panic button at the wrong time. Can you cancel his command?

MR. LOW: The question is, will there be any provision from the ground to override the pilot's control, and in particular if he should fire his escape rocket at the wrong time could we cancel his command.

I think we would be defeating our purpose if we had a ground control that could override the pilot's control because my point right along has been that we feel the pilot plays an important part, especially in emergency missions.

If we put a link in there that would allow us to cut him out of the system, then we may not be able to put him in there, and we completely defeat our purpose of having the pilot in there.

QUESTION: Since the Redstone was being used in the training program rather than the Atlas or some other vehicle, is it considered that the Army might have a basic responsibility for launching it?

MR. LOW: The question is, since the Redstone is being used in the training program other than the Atlas, or some other vehicle, does this imply that the Army will have the primary responsibility for lauhching it.

This is not true as far as the overall mission is concerned. The Army, of course, is cooperating with us like all the other services in the whole Program. The Army will participate in the launching of the Redstone vehicles. They will not participate in the launching of the Atlas vehicle. The Air Force and Convair crews will participate in the launching of that.

The Redstone vehicle was selected because it can simulate many of the conditions that we require. It is perhaps the furtherest along of all the big booster vehicles. And it is an aerodynamically stable vehicle. It has large fins on it, while some of the other boosters do not. It is therefore inherently a safer vehicle in an earlier time period than the Atlas would be.

QUESTION: Will the man have any task on the Redstone, or any controls?

MR. LOW: The question is, will the man have any tasks on the Redstone or any controls.

The answer is Yes. He will have the same tasks as he would have on the Atlas, except that he will not be in the air for nearly as long a period of time.

QUESTION: You mentioned before that the man in the capsule will determine where he is in orbit. There are two parts to this question. First of all, how will he determine exactly where he is, as he is going around? Secondly, the first flight might be one orbit, and then back down, or several orbits.

MR. LOW: The question is, first of all, how will the man determine where he is in orbit; and secondly, will the first flight be one orbit or several.

The anser to the first part of the question is that he will have a so-called navigation periscope. This is a device which allows him to stabilize the capsule in a proper direction by looking at the horizon in all directions. And secondly by observing how quickly he moves over certain landmarks, and with proper maps and stop watches and tables he will be able to determine exactly where he is.

QUESTION: He will have maps?

MR. LOW: He will have displays.

To answer the second part of your question, our present plans are that during the first orbital mission the man will stay in the air for three orbits, stay in space for three orbits. We will have the possibility of course to bring him down after one or two orbits -- or he will have the possibility to come down.

MR. PIPP: We are going to have to end this in a very few minutes. We will have three more questions and that will be all for now, because we have another program coming up here in a very few minutes.

QUESTION: Could you tell us something about the day-to-day lives of these men during training, what hours they have? Can they smoke and drink; do they have to be in bed at nine o'clock?

MR. LOW: The question is, can I tell anything about the day-to-day lives of the pilots; particularly, do they smoke and drink, and do they have to be in bed at nine o'clock.

They lead essentially a normal working man's life. They are working at Langley, undergoing their training programs. This means their mornings are generally taken up by study courses.

Let me go through a typical week here, if you wish, which I dug out of their training plan.

Monday morning they might have lectures in basic astronautics.

Tuesday morning, lectures on tracking and the world-wide range for Project Mercury.

Wednesday morning, part of a continuing study course on basic aviation, physiology.

Thursday, a lecture on capsule instrumentation.

Friday, a lecture on the path flight and range safety systems at Cape Canaveral.

The afternoons will usually be spent working with simulators, doing some proficiency flying, some athletics to keep in shape, and to work on the Project in their own specialty areas. Each man will be assigned to one of the systems of sub-systems.

Beyond the normal working day their time is their own unless they happen to be out visiting say, the McDonnell plant, as they are today. They will have their families in the Langley Field area and live a normal life.

QUESTION: They are at McDonnell now. Can you give us any rundown of what they may be doing in the next month? Will they come back to Langley and so on?

MR. LOW: I understand they will be coming back to Langley directly from McDonnell. I can not tell you exactly when and where their field trips are scheduled. They will be going, as part of this training program to Cape Canaveral;

they will be going to Wallops Island to observe some launchings there. At Cape Canaveral, by the way, they will observe one or several Atlas launchings, I am sure. They will be going out to ABMA; they will be going out to Edwards Air Base, Vanderberg, some of the subcontractors, out to Convair where the Atlas is made; they will be going to the centrifuges at Johnsville, at WAEC, and at Pensacola. These are a few of the places, perhaps most of the places where they will be going.

This is the last question.

QUESTION: Is there any tie-in between Project Mercury and the Pacific Missile Range?

MR. LOW: The question is, is there any tie-in between Project Mercury and the Pacific Missile Range.

All the Mercury launchings will be from the Atlantic missile range. We may utilize the tracking and communications net work of the Pacific Missile Range.

QUESTION: Is there a possibility of a landing in the Pacific Missile Range in case of emergency?

MR. LOW: This is not contemplated at this time.

MR. PIPP: Thank you very much. I know these questions can probably go on for another hour. We have another program coming up. So that will be all on Mercury for right now.

(Thereupon, at 3:50 p.m., the press conference was concluded.)

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

EX 3-3260
Ext. 6325

NASA Release No. 132
For Release:
4:30 P.M. (EDT)
Tuesday, May 12, 1959

ASTRONAUT PROGRAM OUTLINED

A program of training, indoctrination and education has has been drawn up for the seven Project Mercury astronauts to equip them with a wide range of technical knowledge and skills required to pilot the nation's manned orbital capsule.

Project Mercury is under the direction of the National Aeronautics and Space Administration Space Task Group. Headquarters for the Mercury group and the astronauts is the NASA's Space Flight Activity at Langley Field, Virginia.

The astronauts, who reported to Langley April 27, are Malcolm S. Carpenter of Boulder, Colorado; Leroy G. Cooper of Carbondale, Colorado; John H. Glenn of Cambridge, Ohio; Virgil I. Grissom of Mitchell, Indiana; Walter M. Schirra of Oradell, New Jersey; Alan B. Shepard Jr. of East Derry, New Hampshire, and Donald K. Slayton of Sparta, Wisconsin.

The initial phase of the astronaut program is broken down into six areas of activity:

1. Education in the basic sciences - Essentially an academic educational program, this area will include instruction in astronautics, particularly ballistics, trajectories, fuels, guidance, and other aspects of missile operations, basic aviation biology, the space environment, astronomy, meteorology, astrophysics, and geography, including the techniques for making scientific observations in these areas.

2. <u>Familiarization with the conditions of space flight</u> - This phase of training is designed to familiarize the astronauts with the heat, pressure, "G" force levels and other special conditions of space flight. It will include periodic simulated flights in centrifuges and pressure chambers, weightless flying, training in human disorientation devices, the development of techniques to minimize the effects of vertigo, and experiments with high heat environments.

This part of the training program will provide data on the ability of the astronaut to contribute to system reliability under the conditions to be encountered during flight, the psychological and physiological effects of the normal and various emergency conditions which may be encountered during flight, and the requirements for the support and restraint systems, the environmental control system, and the crew space layout.

3. <u>Training in the operation of the Mercury space vehicle</u> - The objective of this segment of the program is to provide a thorough knowledge of the Mercury vehicle and its functions, including the development of the skills required to control capsule during flight, technical knowledge of boosters, propulsion systems and ballistics, and familiarization with the test range, tracking and recovery systems. During this period the astronauts will study the onboard capsule equipment and its proper function, including the development of skills in testing and maintaining the scientific equipment, environmental control system and life-support equipment.

4. Participation in the vehicle development program - Each of the astronauts will be assigned to a system or sub-system of the Mercury vehicle. In this work, he will acquire specialized knowledge of value to the entire group. This material will be exchanged in a series of informal seminars.

Actual work on the vehicle development program by the astronauts will provide limited augmentation of the Space Task Group staff as well as providing them with an intimate knowledge of all aspects of the Mercury vehicle itself.

5. Aviation flight training - The Mercury Astronauts will continue to maintain their proficiency in high performance aircraft in an aviation flight training program. Continued operation of high performance aircraft will give them additional altitude acclimatization, instrument flight training and the physiology of high altitude, high speed flight.

6. Integration of astronaut and ground support and launch crew operation - Familiarization with the operation of ground support equipment and launch crew operations will be accomplished in coordination with the agencies providing boosters and launch facilities. Training in the operation and use of ground support equipment and observation of launch operations will provide the Astronauts with complete knowledge of the launch phase of Mercury flights.

Existing research, development, training and test facilities of the armed services, industry and educational institutions throughout the country will be utilized for maximum effectiveness at minimum cost. A number of experts in many of the scientific and technical subject areas will give lectures to the astronauts during their educational program.

The concentrated astronaut education program began with over-all program orientation briefings by members of the Space Task Group staff. While assigned to the Langley facility, the Mercury Astronauts will work as integrated members of the NASA Space Task Group.

Each of the Mercury astronauts has been detailed to the NASA by his respective military service. They are still on active duty and receiving military service pay; the astronauts will remain on duty with NASA on a full time basis.

-END-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

NASA RELEASE No. 59-136
Ex 3-3260
Ext. 7611

FOR RELEASE:
PM's Tuesday
May 12, 1959

SAMPLE QUESTIONS FROM PROJECT MERCURY TESTS

Here are samples of questions used to gauge the ability and evaluate the personality of Project Mercury aspirants.

These questions were prepared by the Psychological Corp. of New York, N. Y., which furnished a number of written tests used in the Mercury astronaut selection program.

In the ability test sampling, correct answers are underscored.

The personality questions, however, have no correct answers. The same is true for the sentence-completion questions. The responses help the psychologist in making a personal evaluation.

The first two sets of questions are similar to those in the Miller Analogies Test and the Minnesota Engineering Analogies Test.

Directions: Look at the first analogy item below. You read it thus: LIGHT is to DARK as PLEASURE is to ? The correct answer among the four choices is pain, so c has been underlined at the right. In each test item find the word which completes the analogy and underline its letter (a, b, c, or d) at the right.

LIGHT : DARK :: PLEASURE : (a. picnic, b. day, c. pain, d. night) a b c d

Miller Analogies Test

1. LAUGH : (a. joke, b. cry, c. grin, d. humor) :: JOY : SORROW a b c d

2. RECOVER : (a. bottle, b. correct, c. rescind, d. renew) :: RECOUP : RECTIFY — a <u>b</u> c d

3. FICTION : (a. memory, b. fact, c. novel, d. imagination) :: AUTOBIOGRAPHY : RECALL — a b c <u>d</u>

4. REDUNDANT : REPETITIOUS :: (a. non sequitur, b. false premise, c. recurrence, d. precondition) : FALSE CONCLUSION — <u>a</u> b c d

Minnesota Engineering Analogies Test

1. BRASS : ALLOY :: IRON : (a. compound, b. element, c. steel, d. rust) — a <u>b</u> c d

2. CONDUCTANCE : RESISTANCE :: MULTIPLY : (a. integrate, b. magnify, c. divide, d. differentiate) — a b <u>c</u> d

3. BODY : PHYSIOLOGY :: TRIANGLE : (a. astronomy, b. algebra, c. calculus, d. trigonometry) — a b c <u>d</u>

4. VACUUM TUBE : THYRATRON :: CONTINUOUS : (a. alternating, b. regular, c. discrete, d. diminishing) — a b <u>c</u> d

These test items are similar to those in the <u>Doppelt Mathematical Reasoning Test</u>.

<u>Directions</u>: Each problem in this test consists of five mathematical figues or expressions. Four of these have something in common which is not shared by the remaining one. You are to choose the <u>one</u> figure or expression which does <u>not</u> belong with the other four and show your choice by underlining it.

1. (A) 15
   (B) 25
   (C) 125
   <u>(D) 317</u>
   (E) 625

2. (A) circle
   (B) ellipse
   <u>(C) parabola</u>
   (D) square
   (E) triangle

3. (A) 7:49
   (B) 6:36
   (C) 5:25
   (D) 4:16
   <u>(E) 3:12</u>

4. (A) $x + y = 12$
   <u>(B) $2y = 2x + 5$</u>
   (C) $3y = 7 - 3x$
   (D) $5y + 5x = 9$
   (E) $4x = 5 - 4y$

Minnesota Multiphasic Personality Inventory

Directions: Read each statement and mark whether it is true or false as applied to you. If a statement does not apply to you, omit it. Try to mark every item.

1. I often worry about my health. True ___ False ___
2. I am often unhappy. True ___ False ___
3. Sometimes I feel like cursing. True ___ False ___
4. Strangers keep trying to hurt me. True ___ False ___

Incomplete Sentences

Directions: Complete these sentences to express your real feelings. Be sure to make a complete sentence.

1. I am sorry that . . . .
2. I can never . . . .
3. I hope. . . . .
4. At times. . . . .

- END -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

Release No. 59-141
EX 3-3260
Ext. 6325

FOR RELEASE:
May 12, 1959

TRACKING CAMERA PHOTOGRAPHS VANGUARD I IN ORBIT

The Smithsonian Optical Tracking Station at Woomera, Australia, has successfully photographed the Vanguard I Earth Satellite at the apogee of its orbit, nearly 2,500 miles from the Earth. The Woomera station is operated for the National Aeronautics and Space Administration as a part of the civilian space agency's world-wide network of tracking stations.

The Baker-Nunn precision satellite tracking camera, manned by personnel of the Woomera Missile Range, took pictures of Vanguard I on three occasions, May 1, 3, and 4.

No other object as small as this six-inch sphere has been photographed from such a distance. It is comparable to aiming a camera at a golf ball 600 miles away.

The tracking camera, one of 12 located around the world, was especially designed for tracking earth satellites during the International Geophysical Year. The Woomera station is operated under the technical direction of the Smithsonian Astrophysical Observatory for the NASA. Equipment at the station is furnished by the United States; staff and buildings are supplied by the Australian Government.

In a congratulatory note to the staff at the station, Dr. Hugh L. Dryden, NASA's Deputy Administrator, said the tracking team's efforts demonstrated the true capabilities of the Baker-Nunn camera, thus paving the way for more accurate optical satellite tracking data, essential to precise orbital calculations.

The Vanguard I, developed by the U.S. Naval Research Laboratory for the International Geophysical Year, was launched March 17, 1958. It was the second scientific satellite launched by the United States. With a perigee of 402 miles, the satellite is currently making 76 orbits a week. During the week of May 17, it will have completed 4,590 revolutions around the Earth since it was launched. The Vanguard program was transferred from the Naval Research Laboratory to the NASA on October 1, 1958.

(Note: The other 11 camera stations are located at: Organ, N.M.; Olifantsfontein, South Africa; Cadiz, Spain; Tokyo, Japan; Naini Tal, India; Arequipa, Peru; Shiraz, Iran; Curacao, N.W.I.: Hobe Sound, Florida; Villa Dolores, Argentina; and Haleakala, Maui, Hawaii.)

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

RELEASE No. 59-142
FOR RELEASE:
May 13, 1959

Note to Editors:

I thought you might be interested in seeing the attached statement outlining the NASA policy governing information activities of the Mercury Astronauts.

Cordially,

Walter T. B

Walter T. Bonney
Director
Office of Public Information

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

NASA POLICY CONCERNING MERCURY ASTRONAUTS

The Mercury Astronauts have been detailed to NASA by their respective military departments pursuant to an agreement approved by the President which makes them subject to the regulations and directives of NASA in the performance of their duties.

It is recognized that the experiences of the Mercury Astronauts through all phases of Project Mercury, from the commencement of training to accomplishment of orbital flight, will be of great interest to the public. NASA has therefore adopted the following policy on disclosure of information concerning the experiences of the Mercury Astronauts:

1. All information reported by the Mercury Astronauts in the course of their official duties which is not classified to protect the national security will be promptly made available to the public by NASA.

2. Public information media will be granted frequent accessibility to the Mercury Astronauts for the purpose of obtaining information from them concerning their activities in Project Mercury. The timing and conditions of interviews with the Mercury Astronauts for this purpose will be controlled by the NASA Director of Public Information so as not to interfere with their performance of official duties. During such interviews, the Mercury Astronauts will be directed to disclose all information acquired in the course of their

activities in Project Mercury, except information classified to protect the national security.

3. While detailed to NASA for duties in connection with Project Mercury, the Mercury Astronauts

(a) may not, without the prior approval of the NASA Director of Public Information, appear on television or radio programs or in motion pictures;

(b) may not, without the prior approval of the NASA Director of Public Information, publish, or collaborate in the publication of, writings of any kind;

(c) may not receive compensation in any form for radio, television, or motion picture appearances, or for the publication of writings of any kind, which involve reporting to the public their performance of official duties in any phase of Project Mercury; and

(d) may not endorse commercial products.

4. The Mercury Astronauts are free, singly and collectively, to make any agreement they see fit for the sale of their personal stories, including rights in literary work, motion pictures, radio and television productions, provided such agreements do not violate the foregoing restrictions.

May 11, 1959

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

NASA Release No. 59-144
EX. 3-3260
Ext. 6325

For Immediate Release
May 13, 1959

KING BAUDOUIN BRIEFED BY SPACE AGENCY

King Baudouin of the Belgians this afternoon visited headquarters of the National Aeronautics and Space Administration where he was briefed on a number of aspects of the United States civilian space program.

The Belgian Monarch was greeted by Dr. T. Keith Glennan, NASA administrator, with Dr. Hugh L. Dryden, deputy administrator. The following discussions about NASA's programs were presented:

Space sciences, by Dr. Homer E. Newell Jr., assistant director for space sciences; space applications, by Edgar M. Cortright, chief of advanced technology programs; manned space flight, by George M. Low, chief of manned flight programs; and human factors in space flight, by Lieutenant Colonel Stanley White, USAF (MC), a member of the Project Mercury biomedical group. Project Mercury is the NASA manned orbital flight program.

Following the presentations, Dr. Dryden summarized the space agency's overall programs.

- END -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

Address by Ira H. Abbott

Deputy Director

Office of Aeronautical and Space Research

National Aeronautics and Space Administration

before the

Aviation Writers Association

May 15, 1959

* * *

May I congratulate the Aviation Writers Association on 21 years of solid achievement. Your objective coverage of the field has contributed immeasurably to the advance of U.S. aviation. During my long association with the National Advisory Committee for Aeronautics, NASA's predecessor organization, I acquired many friends among you.

Back in 1938 when AWA was born, we were struggling to obtain the research information necessary to develop a practical 400 mph military airplane. The problems seemed well nigh insurmountable.

Today we are struggling with research problems in connection with a 2,000 mph jet transport capable of whisking passengers from New York to London in less than two hours. Yet many problems of the same types that we faced with the 400 mph fighter 21 years ago are still with us in even fuller, more complex measure.

The first technical report of NACA, written in 1915 by Dr. J. C. Hunsaker, former NACA chairman, dealt with the problem of stability and control of an airplane in free flight. In those days, a typical high-speed military aircraft was the Curtiss JN2 with a maximum speed of about 85 mph. Stability and control problems are certainly still with us. As airplanes, rocket-powered aircraft, and missiles reach out farther and faster, those basic problems reach out right along with them, hence the continuing need for a strong basic and applied research program.

As you know, NASA is divided into two separate technical branches: the Office of Aeronautical and Space Research, of which I am deputy director, and the Office of Space Flight Development. There is a very good reason for this: Congress believes that the NACA system proved itself over the course of 43 years. It was determined that NASA's space mission should not prevent it from carrying on the NACA tradition of providing research information and advice to those who are developing and operating aircraft.

We are working in harness with the armed services and aviation industry, focusing many of our research programs on their technical problems, just as NACA did. At their request we also give assistance on specific designs and developments. In short, our research serves the Nation's technology in aeronautics and astronautics throughout the entire spectrum of flight within and without the Earth's atmosphere, whether applied to military or civilian needs. A great percentage of our research is applied directly to spacecraft and missiles.

I make a point of this because the National Aeronautics and Space Act of 1958 authorizes NASA to "acquire ...construct, improve, repair, operate, and maintain... aeronautical and space vehicles." The fact that we are definitely in the development and operation fields as far as space flight is concerned may have contributed to some misunderstanding about our intentions in the aeronautical realm. We do not intend to exercise this prerogative as applied to aeronautics or to compete with the aeronautical industry. Like the Lone Ranger and Tonto, we try to help in times of stress, then gallop away when matters straighten out.

Like most research types, I find myself clucking disapprovingly when subjected to the great volume of "blue sky" talk about space nowadays. Yet we are all guilty of this to some extent and the future of space flight does make fascinating fodder for conjecture. Today I would like to blue-sky a bit, not about space vehicles but about aircraft. Some rather amazing things are still going on within, and just beyond, our old-fashioned atmosphere. These developments have tended to be overshadowed in the press by the fast-breaking developments in space.

I would like to review the entire range of aircraft, from the "ground-effect" system or airborne land vehicle that coasts on an air cushion just above the ground, to the rocket-boosted Dyna-Soar glider with which we hope to explore the range between about 4,000 mph and satellite speeds of about 18,000 mph.

In my opinion, VTOL (Vertical Takeoff and Landing) and STOL (Short Takeoff and Landing) aircraft have a bright future because both have useful military and commercial applications.

The Army, in particular, can use all manner of these vehicles -- "ground effect" carriers, aerial jeeps, VTOLs, and STOLs -- for front line and close support cargo and troop transportation, reconnaissance, surveillance, and so forth.

It was recently pointed out that a modern Army in combat moves at an average speed of three and one half miles per hour -- a one mile per hour improvement over Caesar's Legions. The VTOL-STOL concept may get wheeled vehicles out of the rut and provide the answer to greater speed and mobility.

We started work on VTOL-STOL about 10 years ago, spurred on in equal measure by the success of the helicopter and by its limitations, plus the development of the turboprop engine. The helicopter, which I won't discuss today because it is a well-developed VTOL in a class by itself, is essentially a hovering machine which is relatively inefficient in forward flight. The VTOL, on the other hand, is designed to be a conventional airplane with vertical takeoff and landing capacity added.

As you know, the weight-to-power ratio of the piston engine is too high to warrant serious consideration for VTOL, whereas the turboprop can produce double the power of a piston engine of the same size.

VTOL-STOL jet airplanes tend to be one-third heavier than the conventional transport and need twice the power. VTOL especially needs extra power because it lifts itself straight up by brute force, then shifts from hovering to cruising flight and back down again to hovering flight for a vertical landing.

We at NASA have reached the conclusion that a combination VTOL-STOL is probably preferable to two separate types, because it appears that for practical operational use, both VTOL and STOL capability will be required. (Incidentally, an STOL airplane is generally considered to be one that can use a 500-foot runway and clear 50-foot obstacles at either end.)

On the one hand, we feel that an STOL aircraft would need a VTOL-type control system for low-speed operation and that pilots would tend to operate STOL aircraft well above their minimum landing speeds in order to allow a margin of safety. On the other hand, VTOL airplanes should use short takeoff and landing runs whenever runways are available, to save power and/or to permit takeoff with loads beyond the maximum weight allowed for vertical takeoff.

There are three basic methods by which VTOL flight is achieved: dual propulsion, thrust re-direction and aircraft tilting. Dual propulsion employs two means of propulsion: one for hovering, one for forward flight. Thrust re-direction uses a single means of propulsion with provision for either tilting the thrust unit itself or deflecting the slipstream or jet exhaust with the fuselage remaining essentially horizontal. Aircraft tilting configurations maintain a fixed thrust axis while the airplane itself tilts to perform the transition from hovering to forward flight.

Emphasis in this field has recently shifted somewhat from basic configuration studies to the broader problems of performance and flying qualities of complete configurations which the Armed Services have had constructed in the form of "flying test beds."

Research by NASA has led to the construction of several VTOL flying test beds, sponsored by the Army, Navy, and Air Force.

NASA's research effort in this field is expanding.

For example, our two biggest wind tunnels -- at Ames and Langley Research Centers -- are now largely occupied with VTOL-STOL experiments. However, in line with what I said earlier, we do not plan to pursue engine research in this regard because the engines required are in the development, not the research stage.

All this work is leading into eventual development of the propeller-driven VTOL transport which we consider very promising, especially for short-haul and airport-to-city commuting in this age of great highway traffic jams. Although such a transport will be more expensive to build, the time it may save from city center to city center might make up the difference with something left over. It is difficult to say when these airplanes will become available because that depends to a great extent on over-all economics. At any rate, as I said before, I am optimistic.

A word about the ground-effect system:

This concept is really an offshoot of the aerial jeep, and has interesting possibilities within its limitations. As you know, a peripheral jet generates and contains pressure beneath the vehicle to provide it with support. In other words, it rides on an air cushion. It develops lift by a combination of pressure lift and jet thrust.

This vehicle appears to have some inherent advantages. However, it must glide along the earth's contours or, as the Army puts it, "on the nap of the earth," and is helpless in terrain creased by deep drop-offs or crevices. When the ground opens beneath the vehicle, what happens is much like having a chair kicked out from under you. But this vehicle should be able to move fast and sweep over low obstacles. Mud, that great enemy of the infantry, is no problem. Perhaps these air-cushioned vehicles, which can also move over water, will some day replace the jeep.

Let's turn now to the supersonic transport.

An official of one of our aircraft companies was recently dreaming aloud about the 2,000 mph transports of the 1970s. He speculated that by then it will be possible to take off from New York City at 9:30 a.m. EST and arrive in Los Angeles at 8 a.m. PST in good time for a 9 a.m. appointment.

One of our NASA research men put it another way. Such a plane could make three trans-Atlantic hops a day, carrying a total of approximately as many passengers as does the Queen Mary which takes nearly a week to cross. It wouldn't take many of these airplanes to handle all trans-ocean passenger traffic. Supersonic air transportation will bring such trips well into the commuting range.

Again, I am optimistic about supersonic transports despite the myriad, difficult problems we have yet to solve. Apart from the plane itself, and its economics and efficiency, supersonic air transportation will involve changes in the entire complex of traffic control, and navigational and safety systems.

As for the aircraft itself, it will involve equally many headaches. Using poetic license, I would say that the drag encountered by it will be three times that of the subsonic transport. The outer skin temperature will be about 400 degrees Fahrenheit which is hot enough to bake biscuits. Therefore, today's conventional construction methods are not suitable. The use of stainless steel and sandwich-type construction seems to be required.

Then there is the matter of safety. Today's jets fly at about 40,000 feet. Supersonic aircraft will cruise at 60,000 to 70,000 feet and must incorporate features to eliminate the danger of decompression.

Finally, there is the question of the shock-wave that extends downward from the aircraft, causing a noise like artillery fire -- in some cases, cracking window panes -- and, at the least, waking babies. We do not begin to have the answer to this problem. So far, the best we have been able to do is understand the phenomenon a little better.

The key factor to development of supersonic transports is economics. Although these aircraft are extremely expensive, they are on their way, just as the 400 mph fighter was back in 1938.

NASA is equally proud of its contributions to the still-classified B-70 chemical-fueled bomber, aptly named the "Valkyrie" for the mythical Norse war maidens, beautiful but awesome, who hovered over the battle choosing those who were to be slain.

In some respects, construction of the supersonic transport will be more difficult than building the B-70. For example, the commercial plane will need more space, for passengers, luggage, etc. We achieve efficiency at supersonic speeds by means of slender shapes, and the supersonic bomber can have a much narrower waistline than the transport.

Stepping up the speed range, we come to the X-15, the rocket-powered research airplane which will fly at about 4,000 mph and leap out of the atmosphere into space much as a fish jumps out of water. I am sure you are all much too familiar with this aircraft for me to go into detail. Suffice it to say that it is a joint Air Force-Navy-NASA project, and, as you know, the plane is now undergoing exhaustive captive flight tests under the wing of a B-52. It is no news to you, of course, that we are having the expected teething troubles with its complicated systems.

On X-15 captive flights, which have lasted as long as two hours, North American Aviation's test pilot Scotty Crossfield checks the operation of the following items, among others:

...Auxiliary power units: hydraulic and electric.

...Communications system.

...Control system.

...Stability augmentation system.

...Pressurization.

...Heating, ventilating and defrosting units.

...Instrumentation, including telemetry.

...Landing gear and dive breaks.

...Pressurized suit.

The X-15 is a complicated aircraft. Only after we are satisfied that all is in order will the glide tests, followed by powered flight with an interim engine,take place. The final engine is in advanced stages of developmental testing and delivery is expected this year.

Next we come to the hypersonic, rocket-boosted Dyna-Soar. The immediate purpose of this manned vehicle is to provide research information more advanced than that obtainable from the X-15 and to indicate whether such a concept has military possibilities. The long-range purpose of this joint Air Force-NASA project is, as I have said, to probe the range between 4,000 mph and satellite speeds.

I will not try to predict the speed limit for the efficient transportation of passengers or troops by air but it appears to me at present that the top of the speed spectrum is wide open as far as aircraft is concerned. I think you will agree with me that we still have a few things to think about in the airplane line for a very long time to come, especially in the realm of manned aircraft for national defense.

In conclusion may I say that our research centers are as deeply involved in basic research in gas dynamics, combustion, higher impulse fuels, materials and structures as they ever were. We are frequently asked at NASA to say how much of our research effort is being directed toward aeronautics, how much toward space flight. It is well-nigh impossible to say. We are not dealing with oil and water -- aeronautics and astronautics blend. Basic research in heat-resistant metals, for example, may lead to applications in both areas.

Nor is there any danger that aeronautically oriented research will disappear. In fact, as we push on into space, such research increases in importance. Space vehicles must fly into and out of the atmosphere -- and this is, in some respects, the most difficult part of the journey.

There will be some change in emphasis, however. Much of our research will naturally be geared to technological needs in the space flight field. The character of our work will remain essentially unchanged.

So I would like to say once again to our old friends in the aircraft industry and in the Army, Navy and Air Force: we will still be working with you at the same old stand. We at NASA are well aware that this cooperation has been a two-way street over the years, and will continue to be so. We have gained as much or more from this arrangement as you have.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

FOR RELEASE
Sat., May 16 1959
2 P.M.

Address by Ira H. Abbott

Deputy Director

Office of Aeronautical and Space Research

before the

The Martin Company 1959 Armed Forces Day Program

Baltimore, Md.

May 16, 1959

* * *

I appreciate this opportunity to discuss the contributions of the National Aeronautics and Space Administration to "Spacepower for Peace."

May I first congratulate the City of Baltimore for its contributions to air and space power over the last 50 years. Not far from where I stand, for example, the Vanguard rocket is manufactured. Vanguard is our first true space vehicle designed for satellite launching. Project Vanguard was transferred to NASA last fall and we are proud to have this fine group of scientists with us.

The National Aeronautics and Space Administration (NASA) is an outgrowth of the spectacular Russian space achievements touched off on October 4, 1957 with the launching of Sputnik I. Vigorous steps have been taken since that time to assert American leadership in a field where we had been confident of our inherent supremacy. Passage of the National Aeronautics and Space Act last July was one of these important steps.

The Act created NASA because President Eisenhower and the Congress reached three general conclusions about the need for a national space program:

. . . One, our national security, in all its varied aspects, is involved.

. . . Two, undoubted economic benefits will accrue, benefits that should be as far reaching as those stemming from atomic energy.

. . . Three, the advancement of basic knowledge about the earth and the universe is at stake.

I would like to add a fourth compelling reason: regardless of whether or not this country plunges enthusiastically into space exploration, the Russians are going to. In short, this country has the resources, the ability and the duty, to pioneer in the Space Age.

A key passage in the Space Act reads as follows:

"The Congress hereby declares that it is the policy of the U.S. that activities in space should be devoted to peaceful purposes for the benefit of all mankind."

NASA therefore became operative on October 1, 1958 with a sweeping mandate: to direct all U.S. aeronautical and space research and development apart from military projects which are the purview of the Department of Defense. The Act contained the wise stipulation that NASA, like its predecessor, the National Advisory Committee for Aeronautics (NACA), should work hand-in-hand with the Armed Services and make available to them all developments of military significance, and assist them with specific problems. Although it is not generally known, NASA is hard at work on problems connected with just about all our military missiles.

NACA enjoyed the closest possible relations with the military and commercial aircraft industry during the 43 years of its existence before it became the nucleus of NASA last year. It provided research information and advice to those who are in the business of developing aircraft, and in later years, rockets. I need not recite NACA's splendid achievements to an audience such as this, but I will say that there is hardly an aircraft or missile flying or on the drawing board today that has not benefited vitally from NACA research.

Because Congress believed in the NACA method, it decided that NASA's space mission should not prevent it from carrying on NACA's research services to the aeronautics industry and the military.

Therefore, NASA is divided into two separate technical branches: The Office of Aeronautical and Space Research, of which I am deputy director, and the Office of Space Flight Development.

May I say that despite our authorization to enter aeronautical development, we do not intend to do so. We will not be competing with the aeronautical industry in any way. Like NACA, we will be available when problems arise and we will be pushing forward on research frontiers of our own, trying to anticipate future problems.

In the aircraft realm, we are hard at work on the supersonic transport, capable of 2,000 mph, and its military counterpart, the B-70 supersonic bomber; Vertical Takeoff and Landing and Short Takeoff and Landing Aircraft of all kinds; the X-15 rocket-powered airplane which will travel about 4,000 mph and the rocket-boosted hypersonic glider, the Dyna-Soar, with which we will explore the speed range from 4,000 mph to satellite speeds of 18,000 mph.

In all these programs we are cooperating in whole or in part with the commercial aircraft industry and/or the Army, Navy and Air Force.

The same is true in the space area. Mercury, the manned satellite project, is an excellent example. Many military organizations and individuals are contributing importantly to the project, the aero-medical agencies of the Army and Navy, for example. And the seven-man Mercury Astronaut team is made up of Air Force, Navy and Marine test pilots.

Similarly, we have employed Army Jupiters and Air Force Thors to launch our satellites and space probes during our formative months.

This cooperation has led to some misunderstanding in the public mind because the impression is given that each service and organization involved has its own uncoordinated program. This is not true.

We are constantly striving to pool our resources and avoid waste. The President, for example, has assigned to NASA responsibility for all new space rocket engine and vehicle development, with one exception: the one and $\frac{1}{2}$-million pound clustered rocket engine, known as Saturn, which the Department of Defense will build. NASA will develop a one and $\frac{1}{2}$-million pound single chamber rocket engine which will take longer to complete than the clustered engine.

In the development of each engine, the needs of the military as well as the civilian space programs are taken into account. And each engine will be available to both Defense and NASA.

I do not mean to imply that there is absolutely no duplication and that we do not have red tape problems. We are developing problems in direct ratio to our growth in size and responsibilities. We are facing the same management difficulties that confront every large government or industrial complex. But I am saying that the civilian and military space programs are working remarkably smoothly in harness.

There has been much talk about the complexity of our national space program organization. I will concede that when all the organizations involved are listed on a chart, they present a seemingly hopeless tangle of boxes and dotted lines. Essentially, however, the structure is a simple, effec tive one.

The national space program has two wings: the civilian area of NASA, and the military area of the Department of Defense. They report to the President of the United States who has ultimate decision-making power. The President, in turn, is advised by an eight-member National Aeronautics and Space Council, of which he is chairman. Defense and NASA are represented on this council as well as the Department of State, Atomic Energy Commission and industry. A Civilian-Military Liaison Committee provides one of many links between NASA and Defense.

Other organizations are involved in the national space program, but they are not decision-making bodies although they contribute greatly to the end-item.

Just as aeronautical and space research have a way of blending, civilian and military space research flow together in many instances. The difference, for the most part, comes in the application of its results, and in the degree of secrecy governing the activities. Take the so-called cloud cover or weather satellite: the military in wartime would have certain uses for it, the Weather Bureau in peacetime would have still others. But there is essentially little difference between the basic vehicles.

By way of conclusion, I would like to say that NASA now has research centers and field stations in Virginia, Ohio and California. In mid-1960 we will open the first units of the Goddard Space Flight Center in Greenbelt, Maryland, named for the late Dr. Robert H. Goddard, the "father of American rocketry." When completed, the center will be responsible for development of satellites, space probes, tracking, communications, and data reduction systems. Thus, we will be contributing to Maryland's strength in the aero-space field.

Dr. Goddard once said something that might serve as a guide to all of us as we head into this exciting new Space Age:

"It is difficult to say what is impossible, for the dream of yesterday is the hope of today and the reality of tomorrow."

* * *

NASA Release No. 59-146

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

Release No. 59-147
EX 3-3260
Ext. 6325

FOR RELEASE:
Monday A.M.
May 18, 1959

NASA COMMITTEE FORMED TO STUDY
SOCIAL-POLITICAL ASPECTS OF SPACE ACTIVITY

T. Keith Glennan, Administrator of the National Aeronautics and Space Administration, announced today the formation of the NASA Committee on Long-Range Studies.

The Committee's responsibilities center around that portion of the National Aeronautics and Space Act of 1958 (Sec. 102) which calls for "the establishment of long-range studies of the potential benefits to be gained from, the opportunities for, and the problems involved in the utilization of aeronautical and space activities for peaceful and scientific purposes."

The Committee will deal with such non-technical issues as the international, social, economic, and legal effects of space research and exploration.

Chairman of the Committee is John A. Johnson, NASA's General Counsel. Members, all of the NASA staff, are: Henry E. Billingsley, Director of International Programs; Homer J. Stewart, Director of Program Planning and Evaluation; and Wesley L. Hjornevik, Assistant to the Administrator.

Jack C. Oppenheimer, formerly Attorney Advisor in the Office of the Solicitor, Department of the Interior, has been appointed Executive Secretary of the Committee. He joins the NASA staff today.

-END-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

NASA RELEASE NO. 59-148
EX 3-3260
Ext. 7834

FOR RELEASE:
Wednesday, AM's
May 20, 1959

NEW PROPELLANT BEING STUDIED

A $175,000 contract to evaluate a new and classified rocket propellant has been awarded Callery Chemical Co. of Pittsburgh, Pa., by NASA.

Because of potential military applications, NASA scientists could say only that the propellant would permit substantial increases in payload weight.

Also, the propellant would be non-cryogenic which means, in a liquid state, it won't evaporate or "boil away" at normal earth temperatures, permitting greater ease of handling.

Callery is to explore the feasibility of the new propellant concept, which could have liquid or solid propellant application, and report its findings to NASA in about eight months.

The study will be conducted at Callery's laboratories in Callery, Pa., near Pittsburgh. A major subcontractor in the evaluation will be Reaction Motors, Inc., of Denville, New Jersey, a division of Thiokol Chemical Co.

- END -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

NASA RELEASE NO. 59-150
Ex 3-3260
Ext. 7834

FOR RELEASE:
Friday, PM's
May 22, 1959

APRIL CONTRACTS

NASA wrote $27.6 million worth of contracts in April, with more than $1 million going to 10 universities for space instrumentation and fundamental research.

Biggest part of the total -- a $24 million order -- went to Douglas Aircraft Corp. for Delta, a three-stage launching vehicle announced earlier. (See NASA Release #59-124, April 27, 1959).

One of the university contracts in the amount of $50,000, went to Massachusetts Institute of Technology to develop an atomic space clock operating with cesium vapor. The clock is one of three types of clocks NASA is investigating for possible use in satellite tests of Einstein's Theory of Relativity.

Einstein's theory holds that time moves more slowly in space because of a gravity factor. The theory will be tested by taking simultaneous ground and space readings from extremely precise clocks.

April contracts included:

University of Maryland -- $60,000 -- To investigate the forces between atoms, molecules and ions.

Rice Institution -- $110,000 -- Studies of performance and flow in test section of maximum mach number wind tunnels; $50,000 -- Research into physics of solid materials at high temperatures.

Rennsselaer Polytechnic Institute -- $80,000 -- Mathematical investigation of a variety of control systems.

University of California -- $120,000 -- Study development of and chemical reactions occurring in a gaseous detonation wave.

Itex Corp. -- $170,000 -- Develop sounding rocket instrumentation to sample upper atmosphere.

New York University -- $100,000 -- Instrument two Aerobee-Hi rockets for neutron intensity measurements.

Army Ordnance Missile Command -- $150,000 -- Radiation satellite payload.

Massachusetts Institute of Technology -- $50,000 - Develop an atomic clock using cesium vapor for a satellite; $70,000 --Gamma ray detection instruments and a prototype for a satellite.

University of Minnesota -- $70,000 -- Construction of radiation detection instruments for a satellite and a space probe.

University of Michigan -- $80,000 -- Satellite instrumentation for measuring intensity of radio noise levels above the ionosphere; $80,000 -- Satellite instrumentation for measuring ultraviolet solar emission spectrum.

University of North Carolina -- $60,000 -- Design and build a directional counter system to investigate primary cosmic radiation for a satellite.

University of Chicago -- $300,000 -- Build cosmic ray measuring instrumentation for a space probe.

Butler Aviation -- $150,000 -- Modification of Government airplanes used by NASA.

General Mills, Inc. -- $60,000 -- Furnish nine 100-foot-diameter plastic balloons for communication satellite tests. At least one of these is to be launched as a communication satellite, off which radio signals would be bounced.

Aeroneutronics Systems, Inc. -- $90,000 -- Studies for Project Mercury tracking network.

Radio Corporation of America Service Co. -- $60,000 -- Planning studies for ground tracking and instrumentation facilities for Project Mercury.

American Potash & Chemical Co.--$50,000 -- For 161,000 pounds of ammonium perchlorate for solid propellant research at NASA's Langley Research Center, Langley Field, Va.

Chance-Vought Aircraft Co. --$950,000 -- For four-stage Project Scout integration and a launcher (announced earlier, April 21, 1959-Release #59-120).

General Electric Co. -- $50,000 -- Furnish two telemetry and beacon antenna systems for Project Mercury.

Cincinnati Testing & Research Laboratory -- $80,000 -- Tests on Project Mercury capsule heat shield.

Air Materiel Command (Air Force) -- $120,000 -- Five pressure suits for use in Project Mercury tests.

- END -

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

EX 3-3260
Ext. 6327

NASA RELEASE NO. 59-151
Immediate Release
May 22, 1959

AMES NAMED ASSISTANT NASA DIRECTOR

Milton B. Ames Jr. has been appointed Assistant Director of Aeronautical and Space Research (aeronautics and flight mechanics) for the National Aeronautics and Space Administration, Dr. T. Keith Glennan, NASA Administrator, announced today.

Ames succeeds Ira H. Abbott, who recently was named Deputy Director of Aeronautical and Space Research. In his new post, Ames is responsible for organizing and coordinating NASA research programs in the aeronautics and mechanics of flight vehicles, including airplanes, missiles and space craft.

A native of Norfolk, Virginia, Ames was graduated from Georgia Institute of Technology in 1936 with a bachelor of science degree in Aeronautical Engineering. He joined the staff of the Langley Laboratory, National Advisory Committee for Aeronautics, at Langley Field, Virginia, the same year.

Ames served at Langley five years and in 1941 he came to NACA Headquarters in Washington as engineering assistant to the director. After two years, he became assistant chief of military research, and in 1946 he was appointed chief of the Aerodynamics Division. At the time NASA was established in October, Ames was made chief of the Aerodynamics and Flight Mechanics Division.

During his career, Ames has specialized in aircraft, missile and space craft research in the fields of aerodynamics and flight mechanics.

The new assistant director is a Fellow of the Institute of the Aeronautical Sciences and is author of a number of technical publications. With his wife and three children, he lives in Fairfax County, Virginia.

-END-

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

NASA RELEASE NO. 59-153
EX 3-3260
Ext. 7807

FOR RELEASE:
Thursday, AM's
May 28, 1959

ROEY NAMED SMALL BUSINESS ADVISER

Making sure that small business gets its share of NASA contracts is the job of NASA's newly named Small Business Adviser, Jacob M. Roey.

"There are hundreds of small research organizations with competent staffs that have come into being almost overnight," Roey says. "It is our job to locate them and catalog their interests and capabilities."

The 54-year-old New York City native, who has a 30-year background in general law practice and government procurement, says his new job duties break down under three major headings:

1. Give contract requirements the widest possibile publicity.
2. Build a well-indexed file of small businesses.
3. Make big business contractors aware of small business subcontracting potentials.

Just what is small business?

"By act of Congress, it is any business employing fewer than 500 persons," Roey explains. Pointing up the comparative youth of the field, it was only a year ago (May, 1958) that the U.S. Small Business Administration assigned research and development firms a category heading of their own in official rosters. More than 1500 firms already fall under this constantly growing listing.

"There are many types of work which, because of the intimate, direct relationships, can be done quicker with closer understanding and at less cost by a small business concern," says E. W. Brackett, NASA procurement director.

"We are convinced that small business concerns are not only vital to the national economy but we must have their help to carry out our program." To show the part small business is already playing in NASA programs, Brackett cites a recent quarterly report from NASA's Ames Research Center. It shows small business received more than twice as many procurements and nearly twice the number of dollars as did big business.

Roey came to NASA from Watertown (Mass.) Arsenal where for nearly four years he had served as chief of procurement. Before that he had been an inspector general for legal and procurement activities for the Army Ordnance and, earlier, a lawyer in the Justice Department's Antitrust Division.

During World War II, he worked as a civilian legal officer with the Air Corps in the Eastern U.S. Procurement District. He was admitted to the New York State Bar in 1929 after attending New York University Law School. Until the war, he had a general law practice in New York City.

Presently his wife, Ethel, and their two children, Louise, 20, a University of Massachusetts junior, and Harold, 18, a high school senior, live in Natick, Mass., a Boston suburb. They plan to move to Washington early this summer.

- END -

NEWS RELEASE
PLEASE NOTE DATE

DEPARTMENT OF DEFENSE
OFFICE OF PUBLIC AFFAIRS
Washington 25, D. C.

HOLD FOR RELEASE
UNTIL RECOVERY OF NOSE CONE

NO. 626-59

LI 5-6700, Ext. 71252

FACT SHEET NO. 2

DELIVERY VEHICLE AND RECOVERY SYSTEM

The U. S. Navy and the U. S. Air Force contributed to the recovery of the Jupiter intermediate range ballistic missile nose cone launched from the Atlantic Missile Range, Cape Canaveral, Florida, by the Army's rocket-space team.

The cone carried bio-medical experiments on a space available basis in support of NASA's space program. The Jupiter launching was a regularly scheduled event in the IRBM weapons development program.

The recovery gear employed in the test had functioned successfully in three out of four previous missile launchings by the Army.

The first missile nose cone recovered in the Free World after ballistic flight of long range was picked up by the Navy August 7, 1957. This was transported by an Army Jupiter C rocket.

In May and July, 1958, the Navy recovered two full-scale Jupiter IRBM nose cones in undamaged condition after they were launched from the Atlantic Missile Range. They traveled about 1,500 miles.

For the current test, the carrier vehicle was the Army-developed Jupiter. The missile has been launched 20 times and 19 of these flights were considered successful - an extraordinary record of reliability.

The success of earlier recoveries established that the Army had developed a technique to protect a nuclear warhead from premature destruction when it reenters Earth's atmosphere from outer space at a velocity of about 10,000 miles per hour. The temperature of 5,000 degrees Fahrenheit would otherwise destroy the cone before it reached the target area.

The nose cone for the Jupiter was designed and developed by the Army Ballistic Missile Agency, Huntsville, Alabama, the organization responsible for the entire Jupiter missile system. The Cincinnati Testing and Research Laboratories, Cincinnati, Ohio, assisted in the development work.

MORE

ABMA is an element of the U. S. Army Ordnance Missile Command, which in addition to its primary mission of development of Army ballistic missiles, conducts space missions for the National Aeronautics and Space Administration and for the Advanced Research Projects Agency, Department of Defense.

For today's experiment the Navy team included two destroyer escorts, the USS Snowden and the USS Brough, a fleet tug, the USS ATF Kiowa which effected the actual recovery, and two P2V aircraft.

The ships took up positions in the impact area prior to the firing of the Jupiter in order to observe the reentry of the missile and its cone into the atmosphere. The airplanes helped guide the USS Kiowa to the point at which the cone plunged into the Atlantic.

The intricate recovery gear included a large colored balloon, dye marker, signal lights and a radio transmitter to help the waiting ships locate the cone. A capsule of shark repellent was released to protect Navy "frogmen" who dove into the ocean to secure hoisting lines to the cone suspended beneath the balloon.

Air bottles inside the nose cone inflated the 5-foot orange and blue balloon which carried a small light on top as a beacon.

The USS Kiowa carried special gear designed by ABMA engineers by means of which the nose cone, its passengers and biological experiments were recovered from the sea for return to the mainland via San Juan, Puerto Rico, for study.

Jupiter is in production at the Michigan Ordnance Missile Plant, operated by the Chrysler Corporation for the Army.

The basic missile has been employed in two space projects, the Pioneer III and IV deep space probes launched for the National Aeronautics and Space Administration. Pioneer IV became the first made-in-the-USA satellite of the Sun after its launching March 3, 1959.

END

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

For Immediate Release FACT SHEET NO. 3

MONKEY ABLE EXPERIMENT

The United States successfully launched a Jupiter Intermediate range ballistic missile today. The primary mission was the recovery of the heat protected nose cone; a secondary mission was a four-part bio-medical experiment housed in the nose cone. The four bio-medical research experiments included in the project did not interfere with the primary mission of the firing. They were conducted in support of the Space Program of the National Aeronautics and Space Administration.

Two animals -- an American-born rhesus monkey and a squirrel monkey -- were part of the experiment. In addition, studies were made on yeast, corn, mustard seeds, fruit fly larvae, human blood, mold spore, and fish eggs.

The American-born rhesus monkey, Monkey Able, was trained to perform physical movements throughout its flight over the Atlantic.

This marked the first time this type of experiment had been attempted during an extended gravity-free or weightless state.

The experiment was designed to provide information to be used in studying the effects of rocket flight upon human performance such as the psychological effects of noise, acceleration, deceleration, vibration, rotation and gravity-free state encountered in rocket-propelled vehicles.

The Jupiter missile was programmed for about 1500 miles over the Atlantic Missile Range at a maximum altitude of more than 300 miles. This trajectory would provide a period of weightlessness of about nine minutes.

The experiment was carried out by the Army Medical Service and the Army Ballistic Missile Agency, Army Ordnance Missile Command. ABMA, developer of the Jupiter, launched today's missile. The scientific experiments were conducted on a space-available basis, with no interference with the normal weapons development program.

The data obtained from the scientific experiments will be provided to the bio-medical programs of NASA and the military services. Other Government agencies and educational institutions involved in biomedical research will also receive the analyzed data upon request.

Army doctors trained Monkey Able over a period of several months.

The 7-pound animal was clothed in a special space suit and helmet to protect it from the effects of the flight and to allow collection and transmission of data on its reactions.

A capsule weighing about 250 pounds contained the monkey and provided all of the essentials of life for it during the historic flight.

As a behavioral response, the animal was trained to depress and release a small control lever or hand switch - similar to a telegraph key - with his hand throughout the duration of the flight which included velocities of up to nearly 10,000 miles per hour.

A small red light located within the compartment signalled for the response. The light was set to flash once per second. Very slight pressure was required to operate the key.

Small headphones within the "space helmet" were worn by Monkey Able and the click of the small lever which the animal depressed was amplified and fed into the headphones to assure him of his correct response.

Sixteen channels of information on the experiment alone were to be telmetered to the earth during the flight. These included such items as electrocardiogram, electromyogram (muscular reaction), heart sounds, pulse velocity from large blood vessels, body temperature, behavioral response, respiration rate, and temperature, pressure and relative humidity inside the capsule.

Although the Army previously launched a squirrel monkey over IRBM range in December 1958, this was the first attempt to obtain a behavioral response. Important scientific data were obtained about the physiological reactions of the monkey, although recovery of the nose cone was unsuccessful.

Today's test is expected to have great significance in connection with future human rocket travel.

The American-born rhesus monkey was chosen for two primary reasons: (1) it was within the size limitation and was of a sufficiently high order of primate to provide data which can be successfully applied to human beings; (2) the U.S. has available a large body of information on the rhesus, resulting from more than eight years of experimentation with the species at Walter Reed Army Institute of Research.

The latter consideration was most important for such an undertaking must have a "base line" for comparison. This type of subject and the techniques used in this experiment have been employed in much basic research at Walter Reed since 1950.

The monkey rested during the flight in a special contoured fibreglass bed. The animal was in a semi-supine position, face-down during the launching phase. During the critical reentry phase, its back was again toward the forward movement of the nose cone in order to provide maximum protection from rapid deceleration. The control lever was within reach of its fingers so that it could be pressed and released throughout the flight of some 15 minutes.

A colony of eight monkeys was trained for the experiments. The animal actually flown was not selected until three days before the launching in order to take full advantage of last minute testing and conditioning. The final selection was based upon careful records which had been kept during the months of training and upon the opinion of the doctors.

The animals, all under two years of age, were trained, conditioned, and subjected to environmental tests at the Walter Reed Army Institute of Research, Washington, D.C.; the Army Medical Research Laboratory, Ft. Knox, Ky.; and the Army Ordnance Missile Command, Huntsville, Ala.

All operations were conducted according to established rules for animal care.

In medical and missile test laboratories the specimens were subjected to most of the conditions of actual flight simulated to varying degrees. The one major condition for which no test could be devised was weightlessness. The monkey would experience this state for about nine minutes.

The animals underwent more than six times the normal pull of gravity in a centrifuge without ill effects. Another successful test continuously changed the body orientation with respect to the vertical. Restraint periods were also conducted to determine the possible psychological effects of confinement and curtailment of movement.

The animals were kept in space capsules at Huntsville for periods of several hours without discomfort.

The initial phase of training was in the operation of a modified telegraph key. At first each monkey was given six to eight half-hour training sessions daily, alternating with half-hours of rest. Over a period of weeks, these one-half hour sessions were progressively lengthened to an hour. Doctors reported that the lengthening of the session did not appreciably affect the response rate.

Other phases of training and testing were conducted at Ft. Knox, including restraint and discrimination tests. The latter consisted of standard tests to differentiate between primate species and to establish intelligence levels. At Huntsville, as the training continued, the environmental tests (simulation of missile flight conditions) were conducted.

The Army Ballistic Missile Agency built the capsule in which the monkey was contained and designed the electronic circuitry for the capsule which collected and transmitted the scientific data.

The 250-pound capsule is cylindrical with a diameter of 18 inches and a length of 41 inches. Its design provides all of the essentials for life and relative comfort.

The capsule has its own heating and cooling systems and provides for two complete changes of air every minute. Systems were also provided for disposal of carbon dioxide and moisture. Bottles of high-compressed air carried in the capsule have the capacity of maintaining life until anticipated recovery.

-END-

NASA Release No. 59-155
5/28/59

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

FOR IMMEDIATE RELEASE FACT SHEET NO. 4

MONKEY BAKER EXPERIMENT

The United States today successfully launched biomedical experiments as a secondary mission in the nose cone of an Intermediate Range Ballistic Missile. Essential information is being sought about such space flight problems as launch and re-entry stresses and weightlessness. The experiments were provided by the Surgeons General of the Army and the Navy and were performed in support of the space programs of the National Aeronautics and Space Administration.

Two animals -- an American-born rhesus monkey and a squirrel monkey -- were part of the experiment. In addition, studies were made on yeast, corn, mustard seeds, fruit fly larvae, human blood, mold spore, and fish eggs.

The squirrel monkey experiment -- supplied by the Navy -- is a continuation of Army-Navy cooperation in biomedical research. The two services cooperated in the first experiment involving a squirrel monkey transported in a Jupiter nose cone December 13, 1958.

One phase of today's experiment repeated the December test, from which important scientific data were obtained about the physiological reactions of the monkey although recovery of the nose cone was unsuccessful.

The capsule in which Monkey Baker was carried was developed and built by the Structures and Mechanics Laboratory, Army Ballistic Missile Agency which developed the Jupiter missile system and which launched today's missile. Electrical units for the capsule were provided by the Guidance and Control Laboratory, ABMA.

The Naval Aviation School of Medicine, at Pensacola, Fla., Naval Air Station, designed and fabricated the animal support cylinder in conjunction with the Army Surgeon General. The Naval School also tested, trained and prepared the animal.

The capsule containing the animal support cylinder measured 9.75 by 12.5 by 6.75 inches. Thus 670 cubic inches of space were available for Monkey Baker, survival and recording equipment.

The capsule was installed at the base of the missile nose cone and was attached to the cone. The chamber, instruments and monkey weighed 29.5 pounds. Except for an electrical connection, which supplied power and transmitted data to ground receiving stations, the capsule was entirely self-sufficient.

It was insulated with fiberglass and rubber. Oxygen was furnished from a flask equipped with a pressure operating valve. A mobilbead absorber removed excess moisture from the atmosphere within the capsule. Baralyme pellets absorbed carbon dioxide. The life-supporting equipment was capable of operating until anticipated recovery.

A small bank of thermostatically controlled resistance heaters maintained even temperature in the capsule while the missile was being readied for launching.

Monkey Baker wore a helmet of molded plastic compound over chamois. It was placed upon a molded bed of silicone rubber overlaid with a thin sheet of foam rubber.

The animal's position was supine with knees drawn up to provide maximum resistance to the stress factors involved in the flight. The support cylinder was placed longitudinally in the larger capsule and rested on rubber ribs.

By electronic circuits, measurements were obtained of its respiration, body temperature, pressure within the capsule, and heart action.

After the cone's recovery from the Atlantic Ocean, scientists measured the capsule's atmosphere, including its composition, pressure and temperature, while medical personnel examined the monkey.

The monkey and ancillary equipment were to be flown to the Naval Aviation School of Medicine for study and evaluation. The flight package will be returned to the Army Ballistic Missile Agency at Huntsville, Ala.

All data obtained from the experiment will be made available to the National Aeronautics and Space Administration and the military services. Other Government agencies and institutions involved in biomedical research may also have the data upon request.

In the December, 1958 flight, the subject reached an altitude of approximately 300 miles. This was the longest subgravity state achieved to date in the Free World by an experiment designed to furnish important biological data.

Measurements of heart action in the December 1958 experiment disclosed no abnormalities during acceleration and weightlessness. Short periods of increased respiratory rate were well correlated with increased heart action due to body movement or other recognized stimuli. Adequate body temperatures were recorded. The temperature of the capsule remained remarkably constant, varying less than 3 degrees Centigrade (about 37°F). The temperature averaged 22 degrees Centigrade (about 72° F). The pressure varied less than 1½ pounds per square inch. The average was 16.8 pounds per square inch.

- END -

NASA Release No. 59-155-1
5/28/59

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

FOR IMMEDIATE RELEASE FACT SHEET NO. 5

MOLD SPORE & EGG FERTILIZATION EXPERIMENTS
AND COSMIC-RAY EFFECTS

The United States today successfully launched biomedical experiments as a secondary mission in the nose cone of an Intermediate Range Ballistic Missile. Essential information is being sought about such space flight problems as launch and reentry stresses and weightlessness. The experiments were provided by the Surgeons General of the Army and the Navy and were performed in support of the space programs of the National Aeronautics and Space Administration.

One of these experiments consisted of four tiny capsules -- two containing mold spores sensitive to radiation and two containing egg fertilization experiments.

The eggs and sperm of the sea urchin were encased in three separate vials within 10-ounce aluminum cylinders in which the fertilization reaction was triggered before and during peak acceleration of the giant rocket's nose cone.

The cylinders, 1½ inches in diameter and 5 inches long, were rushed, upon recovery, to San Juan, Puerto Rico, for scientists of the Army Ballistic Missile Agency's Research Projects Laboratory to evaluate the results of this pioneer space biology study. Data will be provided to NASA and the military services. Other government agencies and educational institutions involved in biomedical research will also receive the data on request.

The sperm and eggs within each vial were mixed during the rocket's acceleration. Scientists hope to determine the effect of space phenomena such as cosmic rays, weightlessness and temperature on the fertilized eggs; on the fertilization process in a weightless condition; and on cell division.

Each of the vials contained sea urchin eggs in sea water. One vial contained pre-fertilized eggs. Another held unfertilized eggs which were fertilized by a triggering mechanism during acceleration. A third held unfertilized eggs which were activated before launch and in which the fertilization process was stopped by a fixative triggered during deceleration, as the nose cone reentered Earth's atmosphere.

Prior to the test flight of the biological capsule experiments, scientists from the Research Projects Laboratory at ABMA conducted temperature and pressure tests as well as simultaneous control experiments on land at the Missile Firing Laboratory at Cape Canaveral, Fla.

The study of the effects of space travel on egg fertilization--the effect of weightlessness, cosmic radiation and stress--may enable scientists to gain valuable information about space flight.

The study of the effect of weightlessness on the basic biological phenomenon of fertilization and subsequent cell division was designed to yield information concerning this effect on several aspects of cellular activity.

COSMIC-RAY EFFECTS ON HUMAN BLOOD, ONION TISSUE, SEEDS

Another part of the U. S. biomedical experiment consists of five cylinders requiring no power or temperature considerations, or special handling and containing the following matter:

Blood. Because space vehicles may be used to tranport critical medical supplies such as whole blood, a sample of human blood will be carried on this flight. It is hoped that this test will enable us to determine the effects of gravity forces and radiation upon whole blood.

Cosmic-ray effects on onion tissue and seeds. Purple and white onions will be placed in one cylinder. After the flight they will be checked for radiation reaction in relation to germinative ability. Information to be gained from this flight will demonstrate the interaction of cosmic rays and biological systems; provide information on the biologic effects on animal tissue; and provide experience which can be applied in future experiments.

Cosmic-ray effects on Drosophila. Biologic effects of cosmic radiation will be studied using the pupae of the fruit fly. Information to be gained from this experiment will give information on survivors who will be checked for radiation damage. Survivors will also be bred to determine possible genetic effects.

Dispersed cell suspension for cosmic ray measurement. A cell suspension of yeast will be used to measure the biological effects of heavy penetration. The irradiated micro-organisms will show the specific effects of radiation by exhibiting a reduced rate of cell division.

Effects of radiation on seeds. A capsule will carry some corn in a sealed polyethylene pack, in an effort to determine the effects of cosmic rays on corn germination.

The studies are being conducted by the Army Medical Research Laboratory, Fort Knox, Kentucky.

- END -

NASA Release No. 59-155-2
5/28/59

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

FOR IMMEDIATE RELEASE

FACT SHEET NO. 6

PARTICIPANTS

The United States today successfully launched biomedical experiments as a secondary mission in the nose cone of an Intermediate Range Ballistic Missile. Essential information is being sought about such space flight problems as launch and re-entry stresses and weightlessness. The experiments were provided by the Surgeons General of the Army and the Navy and were performed in support of the space programs of the National Aeronautics and Space Administration.

The four biomedical experiments were supervised by the Surgeons General of the Departments of the Army and Navy. The experiments consisted of two animals -- an American-born rhesus monkey and a squirrel monkey. In addition, studies were made on yeast, corn, mustard seeds, fruit fly larvae, human blood, mold spore,and fish eggs.

The U.S. Army Medical Research and Development Command represented the Army Surgeon General in planning, preparing and conducting the biomedical experiments. Data obtained from the tests will be made available to the National Aeronautics and Space Administration and the military services, and to others involved in biomedical research upon request.

The Navy's School of Aviation Medicine, Pensacola, Florida, supervised the squirrel monkey experiment in consultation with the Air Force School of Aviation Medicine.

The squirrel monkey experiment, Monkey Baker, was similar to an earlier experiment of December, 1958 in which a Jupiter missile was also used although with an unsuccessful recovery.

The American-born rhesus monkey, Monkey Able, was trained and conditioned by the Walter Reed Army Institute of Research, Washington, D. C., the Army Medical Research Laboratory, Fort Knox, Kentucky, and the Ballistic Missile Agency.

ABMA's guidance and structures laboratories designed, built and tested the space capsule in which the rhesus monkey was placed. The same laboratories helped the Navy design and build the capsule for the squirrel monkey.

The Research Projects Laboratory, ABMA, sponsored the experiment utilizing mold spores and eggs.

The Fort Knox Laboratory provided the space biology experiment using yeast, seeds, corn, onions, fruit fly larvae and human blood. These items were exposed to cosmic radiation during the flight and the effects of the radiation on them genetically will be carefully studied by Army medical personnel.

Three universities assisted in designing instrumentation for the rhesus monkey experiment: the Aeromedical and Physical Environment Laboratory, at the University of Illinois, Pennsylvania University, and Tulane University.

The Bioastronautics Unit, representing the Army Medical Research and Development Command, of the Army Ordnance Missile Command, coordinated the scientific experiments.

U.S. Navy planes and ships involved in locating and recovering the nose cone are from the Destroyer Division M-601, Key West, Florida Naval Station; Fleet Air Wing 11, Jacksonville, Florida Naval Air Station; and COMCARIB Sea Frontier, 10th Naval Headquarters, Puerto Rico.

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